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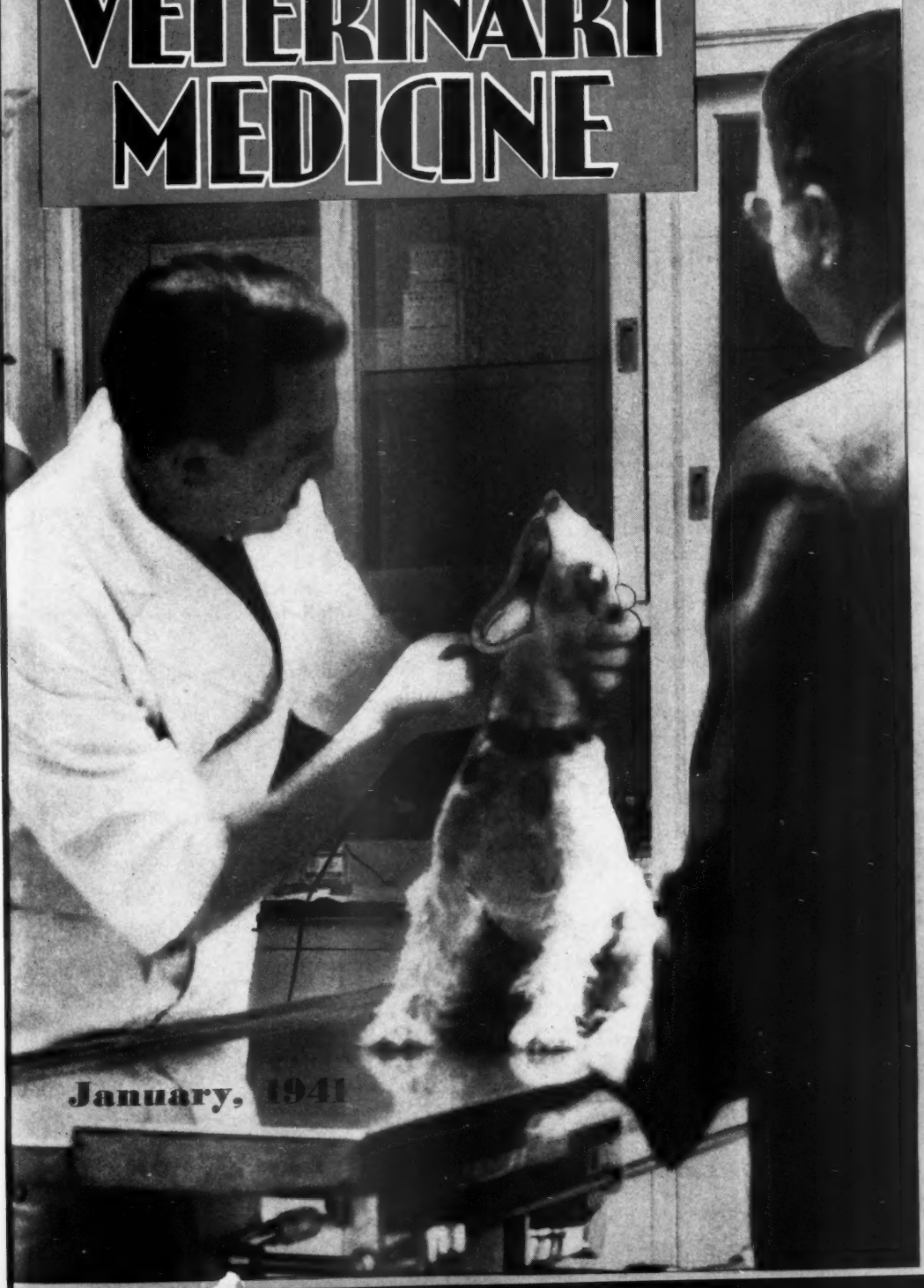
# VETERINARY MEDICINE



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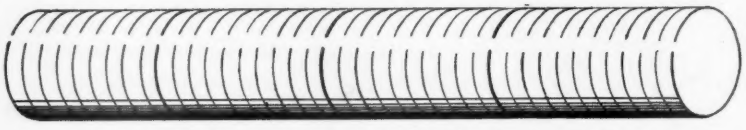

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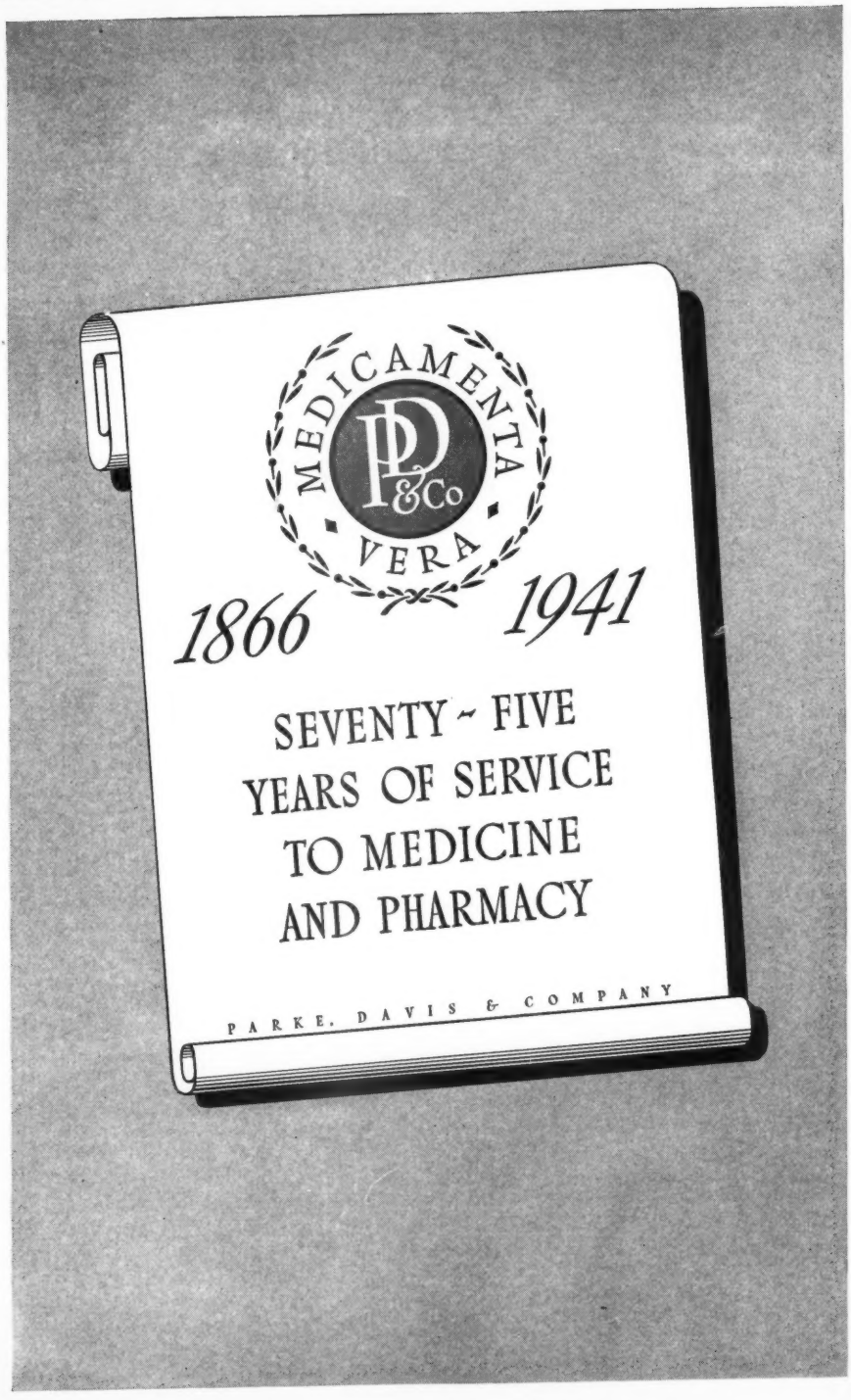
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# VETERINARY MEDICINE

Registered in U. S. Patent Office

VOL. XXXVI JANUARY, 1941 No. 1

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D. M. CAMPBELL, *Editor*
7632 S. Crandon Ave., Chicago, Ill.
Telephone South Shore 7160

H. J. MOSTYN, *Eastern Representative*
1265 Broadway, New York, N. Y.
Telephone Murray Hill 4-4037

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The photograph for the cover was taken in the hospital of Dr. A. C. Merrick in Brookfield, which is a suburb of Chicago, Ill. Doctor Merrick's hospital, at 9115 Ogden Ave., is a showplace among institutions of this kind in the middle west. The photograph is of the examination of a patient received in the ordinary course of practice. A slight movement of the head during the exposure of the film gives the appearance of a little more mouth than the patient actually possesses.

# VETERINARY MEDICINE

Registered in U. S. Patent Office

VOL. XXXVI JANUARY, 1941 No. 1

The race of life is a race for food. The greatest bill in this country is the food bill —$17,500,000,000 annually.

Science has given man additional years of life and the first security he has ever known. In olden times man constantly feared pestilence and famine.

But for a scientific veterinary service, animal plagues would ravish the herds of all nations and the price of meat would be so high that few could afford it.

The marketing of live stock has undergone great decentralization in the past 15 years, involving increasing complexity and inefficiency and a very large additional cost. Thousands of new market outlets have been developed and millions of dollars have been invested in new facilities, few of which are being utilized at more than partial capacity. All these new markets, market operators and market facilities must be maintained by the live stock producer. It is off him they exist.

Local infection with *Erysipelothrix rhusiopathiae* is not uncommon among practitioners in that part of the corn belt in which swine erysipelas is prevalent. Treated without serum the infection is stubborn, painful and long-lasting, and may be dangerous. Serum injections relieve the pain and hasten recovery, but in some cases are objectionable. Recently a number of cases have been treated with serum locally in the form of wet packs applied to the lesion, with highly satisfactory results. Even in cases of several days standing with severe lesions, recovery has ensued in 48 hours.

A group of well-known horsemen have organized and incorporated the Grayson Foundation under the laws of New York. The purpose of the foundation is to support research into methods for the control and prevention of animal disease.

The discovery of the relation of the milk goat to undulant fever in man was made accidentally by Dr. T. Zammit, a Maltese physician who was a member of the British Mediterranean Fever Commission. This discovery was made in 1905, nearly a score of years after Bruce had discovered the organism causing the disease.

Our agriculturists have not always made two blades of grass grow where only one grew before. Too frequently they have so depleted the soil that nothing at all will grow where grass grew before. Nor are such types of farming new. One hundred fifty years ago George Washington complained that whereas our soil was good originally, use and abuse had depleted much of it and ruined some of it, and remarked that wilful neglect of the land may be more serious than arson on the homestead. Fertile acres may restore the buildings, but loss of fertility removes the means of recoupment.

The prevention of soil erosion by either wind or water means more and better grass on the average farm, and that in turn calls for more live stock. Grasses differ much in productivity. An inquiry conducted at the University of Illinois found certain plots of grass producing as follows on a dry matter basis: timothy, 162 lbs., orchard grass, 245 lbs., bluegrass, 297 lbs., and brome grass, 342 lbs. to the acre. Mixtures of grasses produced as high as 416 lbs. of dry matter to the acre.

Dr. John W. Hardenbergh, Executive Secretary A.V.M.A.

There is no way to save the poultry industry except through the scientific approach to the control of poultry diseases. —*Prof. James E. Rice.*

## Example for the A. V. M. A.

The American Library Association and the American Medical Association have cooperated in the development of reading lists about medicine, about mental health, about food, about the child, about diseases, about public health and about personal health. These lists, supplemented by the latest contributions of 1940 and supplemented by further periodical literature in the field of health, make for better education of the public generally and for patients whose own contribution to the prevention of disease will do much to lessen mortality and to promote health.—*Hygeia*

## Rabies Vaccine Must Possess Immunizing Value

All rabies vaccine packaged for distribution subsequent to Nov. 6, 1940, must be tested for immunizing potency, according to an order issued recently by the federal Bureau of Animal Industry. The order applies only to licensed manufacturers—establishments doing an interstate business.

Rabies vaccines must give immunity against at least 1000 m. l. d. according to the Habel mouse test to be marketable.

## Hardenbergh Feted by N J. Veterinarians

More than 150 guests attended a farewell dinner at Trenton Nov. 26th in honor of Dr. John G. Hardenbergh, Plainsboro, who will assume the position of Secretary of the American Veterinary Medical Association, January 1, 1941. The dinner was under the sponsorship of the Veterinary Medical Association of New Jersey, of which organizatin he has been secretary for the past nine years.

Doctor Hardenbergh was born on April 15, 1892, in Berkshire, N. Y. Subsequent to a public school education, he was graduated in 1916 from the School of Veterinary Medicine, University of Pennsylvania. For a time thereafter, he was associated with the Gilliland Laboratories. During the World War he saw active duty as a First Lieutenant in the Army Veterinary Laboratory at Philadelphia and Letterman General Hospital, San Francisco.

In 1920, Doctor Hardenbergh joined the forces of the New Jersey Bureau of Animal Industry but resigned the following year to accept an appointment in the Division of Experimental Surgery and Pathology, Mayo Foundation, Rochester, Minn. In 1927 he became associated with the Walker-Gordon Laboratory Company and remained with that organization as Director of Laboratories.

Among those present at the banquet were prominent agriculturalists, members of the veterinary medical profession from New Jersey and adjoining states and associates who have served with him for the past 13 years.

President Kimnach of Hightstown, on behalf of the members of the Veterinary Medical Association of New Jersey and friends in adjoining states, presented Doctor Hardenbergh with a desk set and traveling bags. Mrs. Hardenbergh also was presented with gifts from the Veterinary Medical Association of New Jersey. Following the dinner program, Mrs. John H. McNeil, President of the Ladies Auxiliary of the Association, presented a farewell gift to Mrs. Hardenbergh from the Auxiliary.

## SOUTHERN VETERINARIANS

Left to right: Drs. W. W. Dimock, Lexington, Ky., Wm. E. Cotton, Auburn, Ala., H. J. Shore, Fort Dodge, Ia., and I. S. McAdory, Auburn, Ala. The first three were on the program of the Silver Anniversary Meeting of the Southern Veterinary Medical Association, held at Birmingham, Ala., November 13-15, 1940; Doctor McAdory was president of the Association.

This was the most largely attended meeting the southern association has ever held. Instead of a clinic, clinical demonstrations were held all during the regular meeting in the ballroom of the Tutwiler Hotel. The program featured breeding diseases and breeding problems.

At the meeting of the Association a year ago, a committee consisting of J. L. Ruble, I. S. McAdory, P. C. McLain, L. A. Mosher, H. L. Frieze, M. R. Blackstock, L. E. Starr, and C. C. Rife, was appointed to study the rabies problem; the primary object being to accumulate and disseminate all possible accurate, unbiased information contributing to the control and eradication of rabies in the southern states. A study was made of all available reports on both experimental and field work on rabies control. This included reports from health officers, veterinarians, or other officials from over 700 cities and towns in the South in which the vaccination method of control is being followed. The conclusions were universally the same: where adequate doses of reliable vaccines are given, cases of rabies among the vaccinated dogs are rare; among unvaccinated dogs and ownerless strays, rabies continues to exist to an alarming extent. On the basis of this study the committee made the following recommendations for the control and eradication of rabies: (1) A system of registration and issuing of certificates and tags to establish the ownership of all dogs. (2) Euthanasia for all ownerless stray dogs. (3) Proper vaccination of all dogs in infected areas. (4) In the event of an outbreak of rabies, quarantine on the owner's premises for all dogs in the territory; or control by a leash not over six feet long if removed from such premises. (5) Either (a) destruction or (b) strict quarantine for a period of six months for all dogs bitten by dogs known to be suffering from rabies. (In the case of bitten dogs given a series of rabies vaccine injections, the quarantine may be reduced to 60 days.) (6) The enactment of regulatory laws in the various states to give the State Veterinarian adequate authority and funds to administer properly measures for the control of rabies in domestic animals.

At the Birmingham meeting, the By-Laws were changed to make the Association's governing body consist of the President, President-Elect, first and second Vice-Presidents, Secretary, Treasurer, and two directors at large. The new officers and directors are: President, A. A. Husman, Raleigh, N. C.; President-Elect, J. C. Wright, Atlanta, Ga.; First Vice-President, S. F. Stapleton, Americus, Ga.; Second Vice-President, L. E. Beckham, Tuscaloosa, Ala.; Secretary, L. A. Mosher, Atlanta, Ga.; Treasurer, M. R. Blackstock, Spartanburg, S. C.; Directors, R. R. Salley, Orangeburg, S. C., and M. H. Dollar, Danville, Ky. The 1941 meeting will be held in Jacksonville, Fla., and will be a joint meeting with the Florida State Association.

---

There is little excuse for the continued existence of a disease that causes the anxiety, suffering, and expense that rabies does when measures for its control and even its complete eradication are known and are comparatively easy to carry out. Yet thousands of dollars' worth of farm stock and many valuable dogs are destroyed each year as the result of animals being bitten by rabid dogs. Furthermore, the number of persons required to take the Pasteur antirabic treatments because of having been exposed to the disease is each year becoming greater. At least 55 human lives were sacrificed to this disease in Illinois during the past 10 years.—*Cir.* 475, *Univ. of Ill.*

Why do we go so far afield as to talk of ostriches when genus Homo is so apt an example of self-deluding aversion to reality?—*Alan Gregg*, M.D.

## Ducks Dive Deep

How deep ducks dive for food was tested recently by Dr. Harry Leon Kutz, Cornell University zoologist. Dr. Kutz experimented with mallard and black ducks by dropping corn into varying depths of water. At five- and seven-foot depths both competed successfully for the corn. But at a ten-foot level, the blacks monopolized the grain, the mallards being unable to reach it. That a ten-foot dive was not easy for the blacks is evident from Dr. Kutz's description: "Preceding each dive a bird would assume a definite stance, with neck fully extended upward and muscles tensed. Then, with a powerful kick from both feet, it would disappear beneath the surface of the water, the kick causing a splash of no inconsiderable proportions."—*American Field.*

## Diagnosis Essential

Your family physician would be the first to admit that diagnosis is the most vital step in the treatment and control of disease. How can we *treat* properly if we do not know for certain *what* we are treating? Much of the treatment and subsequent care "misses the mark" because of an improper diagnosis. It is interesting to observe how many people feel themselves qualified to diagnose poultry diseases when they have no training whatsoever in pathology, bacteriology, parasitology, or even physiology. Disease, which is any departure from health presenting certain marked symptoms, is often quite as difficult to diagnose in the hen as in the cow, or human for that matter.

Many people tell me that they do not call on their veterinarian, because he cannot suggest a cure. Perhaps there is no cure, and he can merely point out the wisest course to follow under the circumstances. The veterinarian's fee of a dollar or two is often a most wise investment especially if it leads to a proper diagnosis of the cause of trouble.—*J. Holmes Martin.*

Of 2054 Indiana farmers who entered the five-acre corn producing contest last season, 1499 raised more than 100 bushels to the acre and 24 raised more than 150 bushels to the acre.

## Turkey Crop Larger

A record-breaking turkey crop for 1940 is indicated by farm holdings on September 1, says a U. S. D. A. news release. An increase from 32,732,000 birds in 1939 to 33,138,000 in 1940 puts this year's production 1% over that of 1939 and more than 10,000,000 birds over the 1932-36 average of 23,081,000. Some of this year's supply is made up of heavy toms and hens held over from last winter because of low prices prevailing since December, 1939.

## Crooked-Toe Deformity in Chicks

Bauernfield, Caskey, and Norris of Cornell University, investigating a crooked-toe deformity of chicks, found that the number afflicted with crooked toes in lots confined on paper-covered floors was much greater than the number confined on wire-mesh floors. Experiments indicated that the deformity was not due to a deficiency of riboflavin and that the percentage of crooked toes was not appreciably diminished by injection of manganese.

## Number of Chickens Shows Cyclic Decline

The number of chickens raised on farms in 1940 is estimated at 680,149,000 birds compared with 772,896,000 last year and a 10-year (1929-38) average of 721,145,000 birds.

The 12% reduction from 1939 in number of chickens raised reflects the influence of an unfavorable season. Feed-egg and feed-chicken price ratios continued unfavorable to producers from last November up to the close of the main hatching season in June. The usual three-year cycle of chicken production has been true to form, showing in 1938 and 1939 the customary two years of increase leading to heavy supplies and low prices of eggs and chickens, and a third year of sharp decrease. Decreases below last year's numbers occurred in all States.—*Poultry Digest.*

## Dog World Statistics*

A fairly accurate estimate of the maximum number of dogs in the United States is 12,000,000, or one for every eleven persons. Of this number, approximately one-fourth, or 3,000,000, are pedigreed, and of the latter, 500,000, or one-sixth, registered.

### Dogs Are "Big Business"

The average annual expenditure of the American public for canned dog food is approximately $60,000,000; for dry or biscuit dog food $5,000,000; for remedies and veterinary service $5,000,000; for accessories such as collars, leads, blankets, toys $3,000,000—total, $73,000,000. Fifteen hundred small animal hospitals represent an investment of $20,000,000, or an average of $13,333 each.

Based upon the year 1939, which can be said to be an average year in the professional dog field, there were 326 dog shows, with 82,473 individual dogs benched. The largest dog show and also the largest ever held at any time and place was the one-day outdoor show at Madison, N. J., the Morris and Essex Kennel Club, with 4,456 dogs entered.

### $18,900,000 of Puppy Sales

In the dog fancy, there are approximately 120,000 bitches bred per year or 180,000 litters (1½ per bitch). On the basis of five puppies per litter, this gives a total of 900,000 puppies born each year. Of this number, not more than 70% reach maturity. The average sales price per puppy is $30, or a sales total of $18,900,000.

### Stud Books

The American Kennel Club (founded 1884), New York City, registers approximately 70,000 dogs, all breeds, per year; the Field Dog Stud Book, Chicago, 14,000, mostly setters and pointers.

### One Dog—18 Persons

The New York State Dept. of Agriculture keeps a record of dog licenses except in New York City and Buffalo. For the first ten months of 1939 the state, exclusive of New York and Buffalo, received $1,031,125 in licenses, representing 443,017 dogs.

New York City has a canine population of approximately 250,000; Buffalo's is approximately 50,000. Thus the state of New York may be said to have approximately 750,000 dogs. The population of the state is approximately 13,000,000, or one dog per 18 persons.

### English Dog Data

There are no championship dog shows being held in England at present, due to the war. Registrations are averaging about 1,200 per month, or about one-fourth the normal number.

Leaders in registrations with the English Kennel Club are, in order: cockers, wires, scotties, smooths, cairns, pekes, pembroke corgis.

### Dog Publications

There are 21 publications in the United States devoted exclusively to the dog, all of them monthlies except one weekly. The *Dog World Magazine*, Chicago, leads the field in circulation and advertising, carrying an average of 1,230 paid advertisements each issue.

New ventures include the monthly *American Dog and Pet Magazine*, Lloyd Bldg., Seattle, Wash.; *Dogs International*, James W. Trullinger, Editor, 400 N. Third St., Harrisburg, Pa.; *The American Chow Chow*, Camarillo, Calif.

*Popular Pets* flashed across the horizon for four issues, creditable ones—and then the publishers decided to discontinue.

Canada's oldtime *Kennel & Bench* is now *Dogs In Canada*, official organ of the Canadian Kennel Club, 25 Melinda St., Toronto, Canada.

### Highest Pound Price for Dog Meat

The highest price per pound ever paid for a dog, approximately $750, was in the sale of the yorkie Ch. Miss Wynsum.

* From *Dog World*, Dec., 1940.

## Vitamin Requirements Long Known

Modern man has preferred steaks, roasts, chops and stews, all muscle meats, to visceral organs for the meat portion of his diet; but of recent years science has shown that the latter contain substances which are vitally important in the diet. Probably this achievement of science is not a new discovery but a rediscovery of what was well-known in ancient times.

Homer, writing somewhere near 3000 years ago, describes a great feast at which "messes of inner meat" (viscera) were served; and another where "the entrails of oxen, stout goats and the fatlings of boars were roasted and served." At this feast particular mention is made that Ulysses "received his mess of entrails," and the reward of the victor in a prize fight was a "goat's belly filled with fat and blood."

That the gastronomical preferences of the Homeric period were not a passing fancy is indicated by Aristophanes who, 300 years later, tells that as a special favor a certain individual received "meat cooked in its own gravy along with tripe and some paunch." Indicating his personal preference at one place he writes: "Here are the quarters; place them on the altar. For myself I mean to go back to the entrails and the cakes." On another occasion he says, "I was cooking a sow's belly for my family and had forgotten to slit it. It swelled out and suddenly bursting, discharged itself into my face."

A great favorite of the Esquimaux at the time of the coming of the white man was the contents of the reindeer's paunch. The explorer Bilbo says of their manner of eating seals: "Everything is devoured, even the entrails (squeezed through the fingers to empty them)." The Plains Indians, when a buffalo was captured, broke an enforced fast with the abdominal and after that the thoracic organs. The red meat was "jerked" (sun dried) and stored for the day when more palatable provender was not available.

The Bible too testifies to a knowledge of nutrition that is accounted very uptodate at the present time. Jeremiah, writing of wild asses, says they were blind at a certain time from xerophthalmia due to lack of vitamin A. He did not say it in those words, but what he did say, "their eyes did fail, because there was no grass," indicates he understood the condition and its cause.

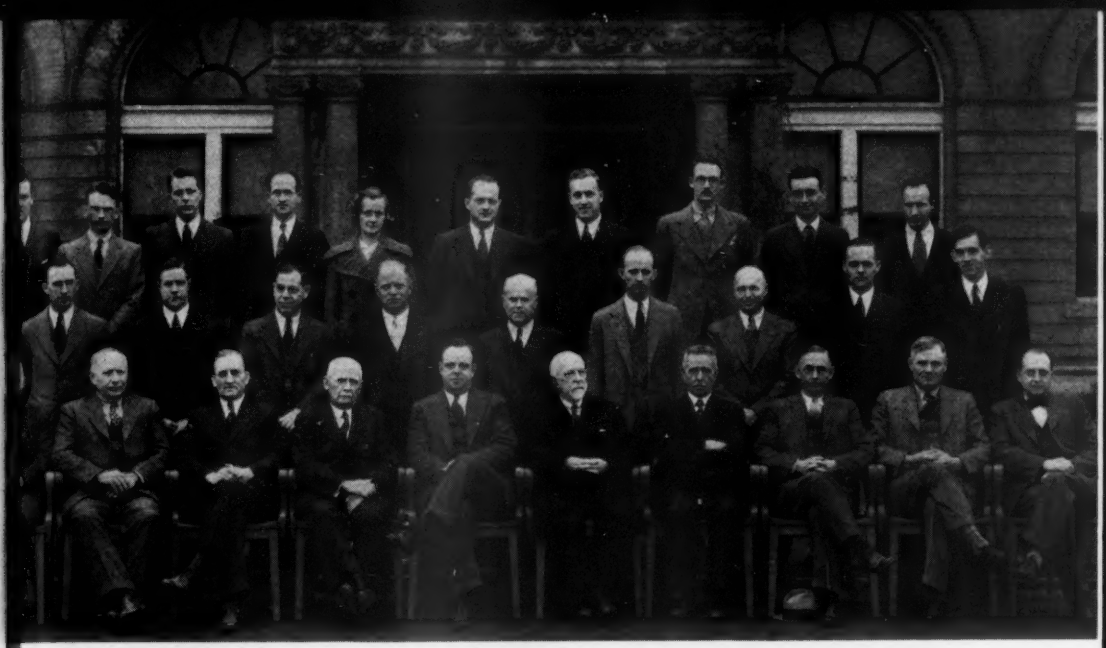
Thiamin Chloride ($B_1$) Crystals

The science of nutrition has made great strides in the last score of years and is still progressing rapidly. Perhaps in time we shall learn again what has been long forgotten about it.

* * * *

## No Public Health Benefit from Bang's Disease Project

Brucellosis [in man] in the United States is not a minor matter. In four years [July, 1934, to August, 1938] almost 27 million cattle were tested. Every 17th animal was found infected and slaughtered! Ironically enough, this has been done in those areas where brucellosis is least common, with the result that the incidence of human brucellosis remains unchanged in the areas where it is most prevalent.—*Hygeia.*



**FACULTY OF THE NEW YORK STATE VETERINARY COLLEGE AT CORNELL UNIVERSITY**

*First Row (left to right):* 1. H. H. Dukes; 2. J. N. Frost; 3. H. J. Milks; 4. W. L. Williams (Emeritus); 5. W. A. Hagan; 6. S. H. Gage (Emeritus); 7. G. S. Hopkins (Emeritus); 8. D. H. Udall; 9. R. R. Birch; 10. Earl Sunderville.
*Second Row:* 1. W. J. Gibbons; 2. Alexander Zeissig; 3. E. L. Brunett; 4. Henry Asmus (deceased); 5. C. E. Hayden; 6. Peter Olafson; 7. H. L. Gilman; 8. M. G. Fincher; 9. D. W. Baker.
*Third Row:* 1. W. S. Stone; 2. A. G. Danks; 3. W. J. Goss*; 4. C. C. Ellis*; 5. Jean Ferguson; 6. W. M. Evans; 7. M. E. Miller; 8. H. T. Batt; 9. C. L. Curtin*; 10. D. Bruner*. The picture was taken at the school's 40th anniversary in 1936.

## Meat Exhibit at the International

The outstanding importance of meat as a basic product of six million farms and as the food around which America's housewives in 29½ million homes build their daily meals was portrayed to tens of thousands of visitors at the 1940 International Live Stock Exposition through an educational meat exhibit in which colorful and attention-getting displays depicted the progress concerning the nutritive and health values of meat.

The main part of the exhibit was housed in 60 feet of glass front coolers. One of the unique displays showed 53 different beef, veal, pork and lamb cuts on an endless circular conveyor 42 feet long. As the conveyor rotates, visitors were informed the particular method of cooking recommended for each of the cuts, whether by roasting, broiling, panbroiling, braising or stewing.

An important phase of the exhibit were displays showing that meat is high in the essential food elements. Transparencies brought out the fact that meat is the richest of the important B group of vitamins, the best known of which are thiamin, riboflavin and nicotinic acid—all important to health. Meat was also revealed as a leader in furnishing protein, phosphorus, iron and calories.

* No longer at the College.

## Sulfanilamide for Preserving Blood

Concentrations of sulfanilamide from 1 in 5,000 to 1 in 1,000 are able to preserve blood stored in a refrigerator at 0° C. Apparently a few organisms are often present, and these do not reveal themselves until the blood has been in the refrigerator for some days or weeks. They then begin to multiply and the blood is lost. It is to guard against this wastage and possible danger that the addition of sulfanilamide is suggested. The sulfanilamide is added to the blood as a concentrated sterile solution made by boiling the requisite amount with 50 times its weight of water for 20 minutes, by which time the original volume will be reduced by about one-half. The solution is added to the blood while still warm, before the sulfanilamide begins to crystallize.—*R. F. Hunwicke,* in *British Medical Journal.*

## 346 Counties Freed From Bovine Brucellosis

November 7th, 48 additional counties were officially designated as modified accredited Bang's disease-free areas by Dr. J. R. Mohler, Chief of the Bureau of Animal Industry. The total number of counties now in the modified accredited status is 346, located in 20 states. In the 48 counties just added, approximately 531,500 cattle were tested. The greatest number were in Portage County, Wis., and Susquehanna County, Pa., the respective numbers being approximately 41 000 and 37,000. The total number of cattle tested in all the modified accredited Bang's disease-free areas is about 2,942,500.

## Winners of Third National Pulling Contest

Dan Arnold, Plainwell, Michigan, won first in the heavyweight class for pairs over 3,000 pounds, with Ned and Dutch, whose combined weight is 4,418 pounds, in the third National Pulling Contest at Harrisburg, Pennsylvania, before more than 7,600 cheering spectators at the National Dairy Show October 17th.

It was the greatest contest of this sort ever held, according to Wayne Dinsmore, Secretary of the Horse and Mule Association of America, who was in charge. Twenty-four top teams competed in the heavyweight pairs. Five teams successfully pulled the dynamometer for the full distance of 27½ feet when set at a tractive resistance of 3,500 pounds, equivalent to starting for 15 or 20 consecutive times a load of 22.7 tons on a wagon on granite block pavement. It was not until the dynamometer was set at a tractive resistance of 3,750 pounds, equivalent to a load of 24.35 tons, that the final decision was reached. Only two and a quarter inches separated the first and second teams, while the third team was less than three feet behind.

The contest for pairs under 3,000 pounds, settled October 14th and 15th, was a good one, but not so sensational as the heavy contest. Twenty-three teams appeared, but seven were disqualified for exceeding the height limit of 16 hands from top of shoes. Two horses whose mates were disqualified were put together as an extra team, so that 17 teams actually competed. Vincent Brothers of New Holland, Ohio, won first on a pair that had been thus put together and had never been hitched as a pair before. The winners were Charlie and Pete, weight 2,944 pounds. They made 3,000 lbs. tractive pull, part distance.

Veterinary medicine originated in equine medicine and much of the knowledge of veterinary medicine even today was learned from observation and experimentation in the equine field.

## Fever Therapy for Trichomoniasis

Preliminary studies by Olsen and Allen at the Beltsville Research Center of the federal Bureau of Animal Industry, indicate that fever therapy similar to that developed for the treatment of human syphilis may prove effective in treating trichomoniasis in turkeys. Infected birds were confined in a small chamber heated by electric light bulbs to a temperature that raised the body temperature of the birds about two to four degrees above normal. After from three to six treatments on alternate days, 20 out of 24 turkeys recovered, as compared with seven deaths among nine untreated birds.

## Transmission of Color

The U. S. Department of Agriculture has issued some interesting records of matings of horses of different colors. Of 1,618 matings of chestnuts, all were chestnuts with the exception of 16, and these may have been due to errors of registration, as chestnuts invariably produce chestnuts. The foals from black on chestnuts gave 33% chestnuts and 37% bay; chestnut on brown gave 52% bay; bay on bay gave 1,295 bays, 270 chestnuts, 125 browns and one black. Greys mated with other than grey produced 73 grey foals and 56 that were not grey. Black on brown produced no chestnuts, but eight black, 20 brown and 12 bay foals. Black on bay produced 20 brown, 12 bay and eight black foals and no chestnuts. Brown on brown produced 365 browns, 157 bays, 123 chestnuts and 10 blacks.

## National A. R. P. for Animals Committee

A year ago the [English] veterinary profession, through the National Veterinary Medical Association, decided to support to the utmost of its ability the organization which was being developed for dealing with air raid precautions for animals.

The personnel of the National Air Raid Precautions for Animals Committee now numbers many thousands and although inadequate equipment and financial difficulties have resulted in curtailment of many excellent local schemes, every praise should be given to those who have continued to support the organization and give it of their best. Despite many handicaps, this public service has been carried on, extended and improved. It is no enviable position to be responsible for a national undertaking with inadequate funds at hand to ensure its equipment being thorough and efficient, and to the Chief Executive Officer of the organization, and to his Deputy, special tribute is due for the tenacity with which they have grappled with the heavy task entrusted to them.

With impediments and restrictions athwart its path, it might have been expected that when the organization was put to the test it would be found wanting, but it can be confidently recorded that the machinery set up has, on the whole, worked smoothly and efficiently. It has dealt with approximately 2,000 to 3,000 casualties among farm stock; approximately 500 of these have been placed under treatment, while one-third has been successfully salvaged. This percentage of salvage is no mean proportion, particularly when it is realized that so many of these casualties have occurred during the hours of darkness when it has been found impossible to take that prompt action essential to success. These results completely justify the extension of the Committee's operations to the rural areas of the country, and the casualty reports which are furnished by the veterinary officers place valuable and irrefutable evidence in the hands of the farmer in support of claims he may make to the Government for losses sustained. — *Veterinary Record.*

## U. S. Free From Ancient Animal Plagues

That country is fortunate whose veterinary service knows little about certain animal diseases. This country is fortunate that its veterinarians are unfamiliar with rinderpest or surra and that perhaps half their number have never seen a case of foot-and-mouth disease or glanders.

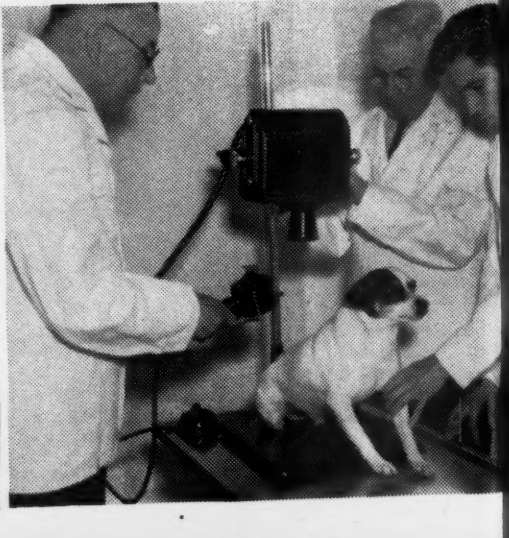
The following introductory paragraphs from an article of considerable length in the *Veterinary Record* illustrate in a striking manner the unfamiliarity of the British veterinarians with a disease, the handling of which is just routine for American veterinarians. We think the British are fortunate that their veterinarians are so unfamiliar with rabies as to make an elemental discussion such as this appropriate for them. The paragraphs in question read:

Under war-time conditions, the precautions normally taken in regard to the importation of dogs are difficult to enforce so that the security enjoyed in the prevention of the introduction of rabies may be impaired. This note has, therefore, been prepared on the experience gained during the last outbreak in this country and is intended for the guidance of veterinary surgeons engaged in canine practice.

Dogs affected with rabies rarely survive a week after the onset of symptoms, and therefore in any doubtful case the dog should be suitably confined, and not destroyed, because diagnosis is thereby facilitated and cases of hysteria are more easily differentiated. Dogs suffering from the dumb form of rabies are frequently not at first suspected, although exhibiting paralysis of the jaw ("dropped jaw") and of the hind-quarters.

Rabies conjures up in the mind of the person not conversant with the disease a picture of a dog in an absolute state of frenzy, a fearsome object to behold and one from which everyone rushes in terror. One imagines foam flying from the mouth during the mad rush, the teeth snapping, and the eyes wild and staring, looking for the next victim. A common idea is that all rabid animals evince a desire to bite anything and everything. A certain percentage of rabid dogs could hardly be made to bite. Others show a decided propensity for attacking their own species only. In one case the rabid dog (an Irish terrier) never attempted to bite any other animal, all his animus being against the human species, of whom he attacked and bit about 17.

A tremendous responsibility is thrown on any veterinary surgeon called in to a suspected case.



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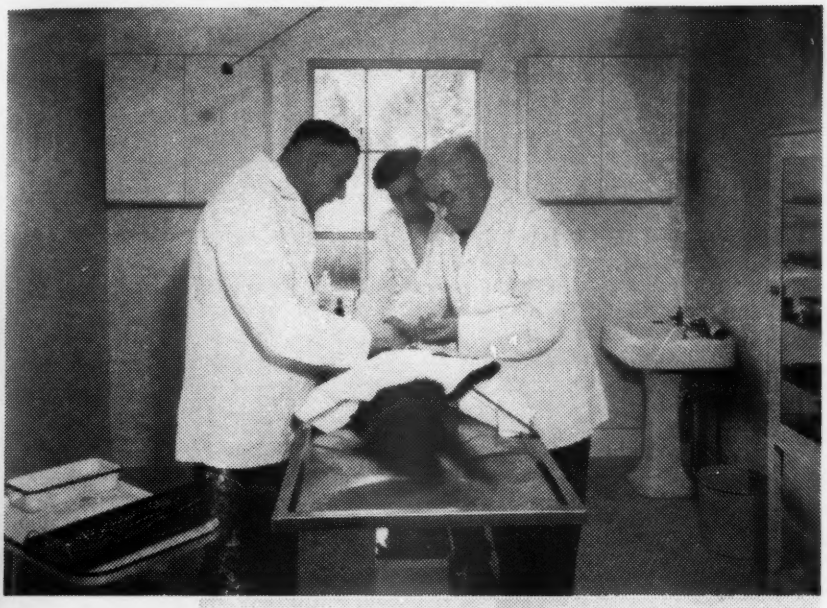
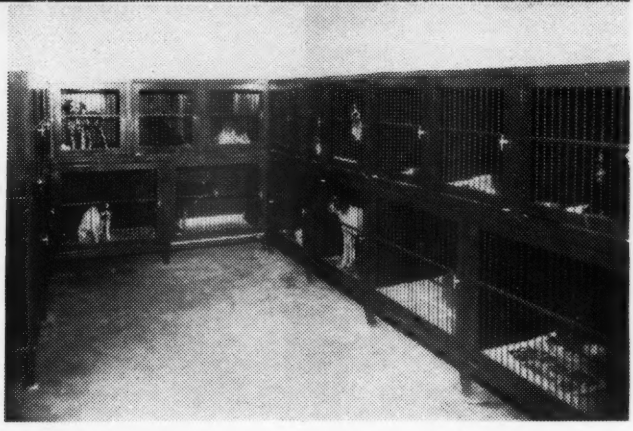
# A Southern Veterinary Hospital





When Dr. Leroy E. Bowen opened his new veterinary hospital at 1404 Main Street, Lynchburg, Virginia, the Lynchburg *News* devoted a full page of its Sunday issue to pictures of the hospital and the various veterinary services available therein. Several are reproduced here.

At the left, above, is shown the exterior of the hospital, with Doctor Bowen's up-to-date ambulance just emerging from the porte-cochere, no doubt on an urgent emergency call. Lower far left, a scene in the examination room, with an attendant holding someone's pet rabbit while Doctor Bowen examines it to find what leporine ailment it is afflicted with—not, we trust, tularemia. Left, a canine patient submits with good grace to being x-rayed by Doctor Bowen and his assistant, Dr. W. H. Hoedt, who was formerly an instructor in the veterinary school of the University of Pennsylvania.

At the upper right is shown the light, clean, well-equipped operating room, with Doctor Bowen and his assistants intent upon a complicated bit of surgery. Lower right, some of the kennels. The roomy establishment also contains (not shown) an office, isolation ward, cat ward, diet kitchen, laboratory, bath, and exercise yards.

# Veterinary Service In the Preparedness Program

By R. A. KELSER, Col. V.C., Washington, D. C.
Office of the Surgeon General, U. S. Army

IN THIS war-torn world with the right of every nation to peaceful existence challenged, the United States, in order to insure its security, has found it necessary to undertake the greatest preparedness program in its history. This great effort is receiving the whole-hearted support of all loyal citizens.

### Responsibility of the Veterinary Profession in National Preparedness

Like the other professions which have greater responsibilities in times like these, the veterinary profession of the United States has evidenced that it is fully cognizant of its increased responsibilities and is responding to the occasion with the splendid type of cooperation to be expected of it. This involves not only the augmentation of our Regular Army Veterinary Corps to meet the requirements of the military establishment, but also the maintenance of the highly efficient veterinary service the profession is rendering in safeguarding the health of our great live-stock industry. This latter is so vital to the defense program of this nation as to constitute an integral part of it. The control, eradication, and prevention of disease among our vast millions of live stock have made possible the development of this highly important industry, thus placing the nation in a self-sufficient status as regards its requirements for meats, dairy products, animal by-products, and animals for draft purposes. What a catastrophe it would be, particularly during a great national emergency, should animal diseases become rampant and epizootics sweep through the country! Against this possibility stands the veterinary profession of America, tried and proved in its ability to protect the health of the nation's live stock.

### Veterinary Reserve Officers on Active Duty

The widespread interest in military veterinary service is indicated by the large number of letters and inquiries received at the Surgeon General's Office from practitioners, colleges, faculty members, and others. Already approximately 165 Veterinary Reserve officers have responded to the call to extended active duty with the Regular Army. The enlisted personnel of the veterinary service has likewise received a good response to the call for recruits to meet service demands and now numbers 1,161, an increase from a strength of 590 which existed prior to the present emergency.

### Animals Still Used by Armies

The mechanization of modern armies has, of course, reduced horse and mule requirements. Let it be said, however, that this has not been carried by any army to the point where the animal has been entirely eliminated. As a matter of fact, the number of horses and mules in the warring European armies is far greater than the average person realizes. Germany, for example, with all of her highly mechanized army, utilized approximately 200,000 horses and mules in her campaign in Poland. At the time of her invasion of Belgium and France she was reported to have had no less than 790,000 horses and mules in her army.

### U. S. Army Has 50,000 Animals

While our army will very properly incorporate into its organization every bit of mechanization it can employ successfully and advantageously, it will also provide horsed units and transport for missions and situations in which the animal excels over the machine. At the beginning of the

COL. RAYMOND A. KELSER, D.V.M., A.M., Ph.D. Colonel Kelser began a four-year tour of duty as Chief of the Veterinary Division, Surgeon General's Office, War Department, May 3, 1938

present emergency there were approximately 23,000 horses and mules in the Regular Army. Since July 1, 1940, the purchase of an additional 27,360 has been authorized. These are being rapidly acquired and shipped into our remount depots for seasoning and conditioning prior to issue to organizations. No definite information can be given at this time as to the ultimate number of horses and mules the Army will have and the organizations they will be incorporated in.

### Veterinary Corps Has Dual Role

While duties incident to the evacuation, hospitalization, and treatment of sick and wounded animals constitute important functions of the veterinary officer, his role in the inspection of meats, meat-food and dairy products must not be overlooked. In this the Veterinary Corps renders an outstanding service. Aside from protection of the health of troops against disease transmitted through spoiled, unsound, or contaminated foodstuffs, this inspection service essentially pays for itself through potential monetary savings represented by the difference in value between what is offered for delivery and what is finally accepted following veterinary inspection. Rejections for failure to comply with federal specifications and contract requirements as to type, class and grade run into high figures. During 1939, for example, a total of 162,614,781 pounds of meat, meat-food and dairy products was inspected by the Army Veterinary Corps. Of this amount 9,008,574 pounds were rejected. The difference in value between the items initially offered for delivry and those finally accepted was approximately $527,935.34. With a vastly increased army, requiring enormous quantities of foodstuffs, the importance of veterinary inspection service is still greater. This need is being met through substantial increases in personnel assigned this type of duty.

### Veterinary Hospital Facilities Increased

Army expansion and reorganization, and plans for training on a large scale, have brought about numerous changes in station assignments of various organizations. Many skeletonized units and those at minimum peace strength have been increased. With all of these there have been shifts in the location of army animals. This necessitates increases in veterinary hospital facilities at a number of our posts and camps and at the remount depots. It has likewise been necessary to increase veterinary commissioned and enlisted personnel at posts and stations where the animal strength has been stepped up.

### Veterinary Officers on Horse Purchasing Boards

The procurement of the approximately 27,000 additional horses and mules thus far authorized, has added materially to the work of the various Remount Area Purchasing and Breeding Headquarters. For activities of the Army Remount Service the United States is divided into seven Remount Areas. The designation of these areas and the locations of their respective headquarters are as follows: Eastern, headquarters at Front Royal, Virginia; East Central, headquarters at Lexington, Kentucky; South Central, headquarters at San Angelo, Texas; North Central, headquarters at Kansas City, Missouri; North Western, headquarters at Fort Douglas, Utah; South Western, headquarters at Colorado

Springs, Colorado; and Western, headquarters at San Mateo, California. One or more horse and mule purchasing boards operate out of each of these headquarters, making purchases in their respective areas. The boards consist of a Quartermaster Officer and a Veterinary Officer.

The Army's three remount depots at Fort Robinson, Nebraska, Fort Reno, Oklahoma, and Front Royal, Virginia, are providing facilities to increase their capacities to 4,500 animals at each of the first two, and 3,500 at the last.

### Training for Veterinary Reserve Officers

Training in military duties is of the greatest importance to all branches of the army. The Medical Department is making adequate provision to insure that all its personnel, both commissioned and enlisted, receives proper training. Among courses recently outlined and approved for the Veterinary Corps are those to fit Reserve officers for duty as commanding officers and executive officers of veterinary hospitals; as station veterinarians; as remount depot veterinarians; as purchasing board veterinarians; as inspectors of meat, meat-food and dairy products; as forage inspectors; and as chiefs of veterinary sections in corps area laboratories or chiefs of independent veterinary laboratories. The courses for commanding officers and executive officers of veterinary hospitals and for station veterinarians will be given at stations having the larger veterinary installations. Training in remount work will be given at the army's three remount depots and instruction in purchasing board duties will be provided by assigning suitable Veterinary Reserve officers to the various Remount Area Purchasing and Breeding Headquarters. The laboratory courses are given at the Army Veterinary School, Army Medical Center, Washington, D. C., as is the course for inspectors of forage. In conducting this latter course the Army Veterinary School has the collaboration of the Hay Inspection Service of the Agricultural Marketing Service, U. S. Department of Agriculture. The course in meat and dairy hygiene is given at Chicago, the first class starting on November 25, 1940. Another very important course is that in medical field training to be conducted at the Army Medical Field School at Carlisle Barracks, Pennsylvania.

### Training for Veterinary Enlisted Personnel

The training of enlisted personnel of the Medical Department is receiving its full share of attention. Classes for enlisted men are now being conducted at the Army Veterinary School at three-month intervals. There have been approved courses to fit men as general veterinary technicians; others to train them for special duties, such as laboratory work, etc. Routine training in various types of post and station duties is given enlisted men at the stations to which they are assigned. It is also contemplated sending small numbers of specially selected enlisted men to Chicago for advance training in meat inspection technology. All Medical Department selectees will receive elementary basic training at the Medical Department Replacement Centers to be established at Camp Lee, Virginia, and Camp Grant, Illinois.

### Veterinary Service at Army Posts and Depots

At present veterinary station service is provided at all important posts and stations in the United States and its foreign possessions. At posts with animals one or more veterinary officers, according to requirements, and adequate-size detachments of enlisted men of the Medical Department (Veterinary Service), are assigned. Posts with few or no animals, but of such size as to require large quantities of foodstuffs, are assigned a veterinary officer with one or two enlisted technicians for food inspection duties. The establishment of new Air Corps fields and bases has called for a considerable number of these smaller veterinary units.

As might well be imagined, the requirements for veterinary inspection service has increased very markedly at the Army's subsistence depots, especially that at Chicago. Enormous quantities of food are necessary for our rapidly expanding army. Contracts involving huge sums of money are con-

**Constant supervision of the health of the foals is an important part of the veterinary service of remount breeding operations. This is a scene at the Front Royal Army Remount Depot. Capt. Wm. E. Jennings of the Veterinary Corps is weighing the foal**

stantly being let and large parts of the expenditures are for meats, meat-food and dairy products. At Chicago and other large packing centers great quantities of these foodstuffs are prepared and handled under Army Veterinary Corps inspection.

Veterinary service at our remount depots is not only concerned with the hospitalization and treatment of sick animals but also with breeding activities and the conditioning and processing of animals for issue. Then, at the Front Royal Depot we have a splendid, well-equipped and adequately staffed research laboratory. This laboratory is devoted to the study of equine diseases of special importance to the military service. Studies of equine influenza and its complications and periodic ophthalmia constitute major projects. A research laboratory such as this, located at a remount depot where cases of diseases and conditions requiring study are constantly received, is in a position to render very valuable service.

### Veterinary Laboratory Service

As is well known, the Army Veterinary School at the Army Medical Center, Washington, D. C., aside from its instructional functions, maintains one of the finest veterinary laboratories in the world. There numerous diagnostic tests and procedures are carried out; examinations and analyses of foodstuffs of animal origin are made; and veterinary biological products manufactured. The latter include encephalomyelitis vaccine, equine infectious abortion bacterin, mallein, tuberculin, etc.

Veterinary laboratory service is also conducted at Fort Sam Houston, Texas, and Fort Mason, California. It is contemplated that before long corps area laboratories will be in operation and in each of these a veterinary section is included.

The Veterinary Corps has one of its officers on duty in the Medical Research Laboratory of the Chemical Warfare School at Edgewood Arsenal, Maryland, for the purpose of assisting in the development of horse gas masks and means for the protection of animals against agents of chemical warfare.

A VIEW OF SOME OF THE BUILDINGS IN THE VETERINARY HOSPITAL AREA AT FRONT ROYAL, VIRGINIA

Left to right: house for laboratory animals; office and hospital building (in rear); veterinary research laboratory; Ward No. 2; Utilities Shop; Ward No. 3

An officer of the Corps is assigned to the St. Louis Medical Supply Depot on work incident to the preparation of specifications and procurement of veterinary professional equipment.

### Transportation and Foreign Service

When animals are shipped overseas, transport veterinarians and veterinary enlisted personnel are provided by the Veterinary Corps.

Veterinary service is provided in all foreign departments with the exception of Alaska. Increases in the Alaskan garrison will probably soon require a detail of veterinary personnel for that department.

Because of recent changes in tables of organization it may be well to indicate briefly where and to what extent veterinary personnel is utilized in tactical and field units of our expanding army. It must be realized, of course, that changes may be made at any time so that what is stated now may not be accurate in every respect at a later date. Further, no attempt will be made to indicate the probable number of each of the different organizations and units to which veterinary personnel is attached. Such information is not available for publication at the present time and the ultimate figures will depend on future developments.

### Veterinary Personnel With Army Organizations

Veterinary personnel is provided for tactical and field organizations as follows, starting at the top with General Headquarters of a field force:

GHQ, 1 Colonel and 1 Captain.

Army Hq., 1 Colonel and 1 Captain.

Corps Hq., 1 Lt. Colonel

Hq. Infantry Division (Square), 1 Major—2 enlisted men.

Hq. Infantry Division (Triangular), 1 Major—2 enlisted men.

Hq. Cavalry Division, 1 Major, 1 Captain—2 enlisted men.

Hq. Armored Division, 1 Major—1 enlisted man.

Cavalry Regiment, All Horse, 3 Captains or Lieuts.—14 enlisted men.

Cavalry Regiment, Horse-Mechanized, 1 Lieut.—4 enlisted men.

F. Art. Regiment, 75-gun, H-drawn, 2 Captains or Lieuts.—10 enlisted men.

F. Art. Regiment, 75-How., Horse, 2 Captains or Lieuts.—10 enlisted men.

F. Art. Battalion, 75-How., Pack, 2 Lieuts.—9 enlisted men.

F. Art. Regiment, 75-gun, H.D., Tri. Div. 1 Capt., 2 Lieuts.—12 enlisted men.

Veterinary Troop, Cav. Div., 1 Captain, 3 Lieuts.—64 enlisted men.

Veterinary Company, Separate, 1 Captain, 6 Lieuts.—185 enlisted men.

Quartermaster Squadron, Remount, 1 Captain, 4 Lieuts.—32 enlisted men.

Quartermaster Troop, Pack, Medical Dept., personnel not yet specified.

Quartermaster Battalion, Wagon, 1 Captain, 3 Lieuts.—16 enlisted men.

Quartermaster Company, Refrigeration, 1 Capt., 1 Lieut.—8 enlisted men.

Veterinary Evacuation Hospital, 1 Lt. Col., 1 Maj., 3 Capts., 1 Lieut.—89 enlisted men.

Veterinary Station Hospital, 1 Captain, 3 Lieuts.—78 enlisted men.

Veterinary General Hospital, 1 Lt. Col., 1 Maj., 3 Capts., 5 Lieuts.—267 enlisted men.

Veterinary Convalescent Hospital, 1 Lt. Col., 1 Maj., 3 Capts., 4 Lieuts.—256 enlisted men.

Medical Laboratory, Army or C. Z., 1 Major —3 enlisted men.

## Number of Veterinary Reserve Officers Required

The question frequently asked the Surgeon General's Office is, how many Veterinary Reserve officers will be required for active duty under the present program. This cannot be immediately answered with an assurance of accuracy. As previously indicated, to date approximately 165 officers of the Veterinary Corps Reserve have been placed in active service. During the remainder of the current fiscal year, with the establishment of new camps, air fields, training centers, etc., and the activation of additional tactical organizations, it will be necessary to call to active duty additional Veterinary Reserve officers. It has been estimated that the total number of veterinary officers (Regular Army, Reserve, and National Guard) required for 1940-41 will be 519. This is a fairly liberal figure and that number may not actually be reached during the year. The additional veterinary personnel requirements for succeeding periods will depend upon the extent of future expansion and the number and character of additional units organized.

Until recently the War Department's general policy with regard to extended active duty for Medical Department Reserve officers was to call only lieutenants and captains. Only a very few exceptions were made to the rule. However, as National Guard units are brought into Federal service they of course are bringing in their senior as well as junior officers, and now, requirements for senior Medical Department officers from the Reserve Corps will be met by calling individuals of whatever grade needed.

At the present time there are 1,530 officers in the Veterinary Corps Reserve. This is in excess of the procurement objective set by the War Department. Under present circumstances only a portion of this group will be required for active duty in connection with the preparedness program. Thus, unless future developments indicate the necessity for proportionately more horsed units, no increase in the present strength of the Veterinary Corps Reserve is necessary. The War Department has consequently suspended, for the time being, the routine commissioning of additional veterinarians.

LT.-COL. LLOYD C. EWEN, V.C.

**Colonel Ewen is depot veterinarian at the Front Royal Remount Depot. He was co-author of two excellent articles on the care of brood mares, foals and stallions which appeared in *Veterinary Medicine* last year (April, 1939, pp. 220-228; May, 1939, pp. 292-299)**

## Commissioning Veterinary Reserve Officers Discontinued

Prior to enactment of the recent legislation authorizing the President to call reserve officers to active duty, with or without their permission, commissions could be tendered recent graduates of veterinary colleges, under 35 years of age, who wanted extended active duty and who were desired for same. This is now no longer necessary because of the President's authority to call out any or all reserve officers required. The only exception which can now be made is in the case of the veterinarian who has special training for a particular assignment for which there is no equally well qualified individual already holding a commission. Such cases will not be numerous.

## Assignments to Active Duty

Except in the case of independent stations, the assignment of reserve officers to extended active duty has been decentralized to the various Corps Area Commanders. All reserve officers placed on extended active duty must have the prescribed physical examination within 90 days of the date they enter on active duty. They are reexamined after reporting for duty.

### Resignation of Commissions

Resignation of commission by a reserve officer will not be accepted, under present conditions, except by express approval of the Secretary of War in each case. However, under the recent legislation empowering the President to order reserve officers to active duty, any such officer below the grade of captain may, if he has dependents, resign his commission when actually called to duty or within 20 days thereafter.

### Foreign Duty for Reserve Officers

Reserve officers can be assigned to foreign stations in United States possessions. To be considered for foreign service a Reserve officer is, at present, required to certify his willingness to remain two years on such duty, provided his services prove satisfactory and Congress appropriates the necessary funds. It is also the policy to require that a reserve officer have at least six months active duty prior to assigning him to foreign service. These provisions do not apply to officers assigned to organizations which are ordered to foreign service.

### Status of Veterinary Students

A large number of inquiries are being received from veterinary students and colleges with regard to the status of students pursuing courses for the degree of Doctor of Veterinary Medicine. This is a matter outside the jurisdiction of the Surgeon General's Office and the War Department. Attention might, however, be invited to the following: Under the provisions of Section 5-(f) of the Selective Training and Service Act, any person, who, during the year 1940, entered upon attendance for the academic year 1940-41, at any college or university which grants a degree in arts or science, to pursue a course of instruction, satisfactory completion of which is prescribed by such college or university as a prerequisite to either of such degrees; or at any university to pursue a course of instruction to the pursuit of which a degree in arts or science is prescribed by such university as a prerequisite; and who, while pursuing such course of instruction at such college or university, is selected for training and service under this Act prior to the end of such academic year, or prior to July 1, 1941, whichever occurs first, shall, upon his request, be deferred from induction into the land or naval forces for such training and service until the end of such academic year, but in no event later than July 1, 1941. To obtain this deferment for the 1940-41 college year the student must request same and supply his local board with the information required by regulations.

Beyond the deferment provided for college students during the academic year 1940-41, under conditions as indicated above, the Selective Training and Service Act and the regulations which have been published thereunder, make no provision for further deferment of students pursuing college courses for professional or other degrees.

* * * *

## What! No Scientific Food Inspection?

The Royal Canadian Army Veterinary Corps has been disbanded, following the complete mechanization of the cavalry units in the Canadian army. All the military veterinary equipment will be stored in Toronto pending the time, if ever, when the horse will be used in warfare again.

It would seem those responsible for dispensing with the horse in the Canadian military forces must have unlimited faith in the progress of invention. Surely no type of mechanically propelled vehicle yet developed is capable of supplying troops at the front; as the campaign in Poland, where the German army used 200,000 horses, or in France, where it employed 790,000, or in Greece, where the Italian forces bogged down through faults of their mechanical equipment, has amply demonstrated.

Canada's greatest hazard in abandoning horses in its army lies in the fact that should horses later be required for some military operation, the army will possess no personnel that knows how to care for them or use them. Developing such a personnel may easily take more time than the emergency will allow.

## Our Greatest Industry

The live stock and meat industry, which had its beginning with the establishment of Colonial flocks and herds along the Atlantic border, increases in magnitude yearly. It is the nation's greatest single industry involving the livelihood of about one-fifth of the population. The meat animals on our six million farms number about 145 million head, an increase of about 11 million head over a year ago. In 1939 approximately 111 million head of cattle, hogs and sheep moved from farm and ranch to market to provide the greatest supply of meat in the nation's history—17,201,000,000 pounds. During the first nine months of 1940—January to September inclusive—our meat consumption was 11% greater than for the same period a year ago.—A. K. Mitchell, Chr. Nat'l L. S. and Meat Board.

* * * *

## University of Nebraska Wins Intercollegiate Meat Judging Contest

A trio of animal husbandry students from the University of Nebraska, demonstrating their knowledge of what constitutes quality in steaks, chops and roasts, piled up a score of 2439 points out of a possible 2700 to capture national honors in the 15th annual intercollegiate meat judging contest at the International Live Stock Exposition. Teams representing 13 colleges and universities participated in the contest.

Runners-up in the contest and trailing Nebraska by only 15 points were the University of Illinois team and the Oklahoma A. & M. College team. The remaining teams finished in the following order: University of Missouri, Kansas State College, University of Wisconsin, South Dakota State College, Texas A. & M. College, Ohio State University, Iowa State College, Pennsylvania State College, University of West Virginia and the University of Minnesota.

This was Nebraska's sixth win in this annual event during the 15 years in which it has been held, the other victories being in 1926, 1928, 1935, 1937, and 1938. Already permanent possessor of a trophy offered by the National Live Stock and Meat Board, this year's victory gives Nebraska another permanent trophy.

## Unchanging Human Nature

Referring to the reception of Sir David Bruce's discovery that Malta fever (brucellosis) is a separate entity and not a variety of typhoid fever or malaria, as had previously been supposed. Hughes said: "The opposition was strong, motivated by that common opposition to new theories which characterizes many who are unwilling to acknowledge truths which they have failed themselves to discover and demonstrate." The control of brucellosis in cattle is beset by this same sort of prejudice which is as common among veterinarians now where this disease is concerned as it was among physicians in the 1880's.

* * * *

## Kinsley Laboratories Goes to "Corn States"

It has been announced that Dr. A. T. Kinsley, Kansas City, for reasons of impaired health, will retire from the management of the Kinsley Laboratories January 1st. The laboratories will be moved to Omaha, incorporated with the Corn States Serum Company, and continued under the direction of Dr. J. D. Ray, who for many years was associated with Doctor Kinsley in the management of the laboratories.

A. T. Kinsley

The Kinsley Laboratories were established about 30 years ago. At that time Doctor Kinsley was connected with the Kansas City Veterinary College. It was perhaps the first exclusive veterinary biologic laboratory in this country; certainly at present it is the oldest laboratory of this kind. Since the close of the Kansas City Veterinary College (1918), Doctor Kinsley has devoted practically all his time to the management of the laboratory and his extensive consultation practice.

Professional employees of Kinsley Laboratories will continue in their present capacities after their removal to Omaha, which it is contemplated will take place about the first of February.

# 44th Annual Meeting of the U. S. L. S. S. A.

H. D. Port
President, 1940

**December 4, 5, 6, 1940**

The 44th annual meeting of the United States Live Stock Sanitary Association was held, as usual, in Chicago during the International Live Stock Exposition, the dates being December 4, 5 and 6, 1940.

The attendance was perhaps not quite up to the average. This too was usual in even numbered years, particularly if any considerable number of changes in state administrations are imminent as a result of a preceding general election.

The program, however, was an excellent one in scope and interest and the new secretary, Mark Welsh, received many compliments upon the arrangements made for the convention.

### Poultry Program

Cliff Carpenter stole the show with his "Information, Please" type of program for the half day devoted to poultry diseases, arranging six recognized experts in the various divisions of poultry pathology on the platform and asking them prepared questions. Doctor Carpenter put on a program that for novelty and informative value was not approached by anything else during the meeting and only the Bang's disease program approached it in holding the interest of those in attendance at the meeting.

### Bovine Brucellosis

Few subjects ever presented to this association in the 44 years of its history have aroused as keen interest and expectation as did the paper by Dr. John R. Mohler on calfhood vaccination as a preventive measure in the control of bovine brucellosis. The program presented by Doctor Mohler was very generally satisfactory. It did not go as far in the matter of vaccination as many would have liked to have seen it; and as was to be expected, there were a number present opposed to any vaccination whatever. However, they did not disturb the majority who welcomed calfhood vaccination as a "first step" in the general improvement of control measures for bovine brucellosis.

In effect, in accepting vaccination the live stock sanitary authorities were acceding to the inevitable. The live stock producers have already decided that it shall be given a trial. Some few attempts were made at "needling" the program, but they appeared rather futile.

Naturally with the interest in the subject of brucellosis control at a high point, the report of the Committee on Bang's Disease attracted more attention than the report of any other committee.

The report called attention to the occurrence of brucellosis in all domestic and many wild animals, and also to the fact that the three types of the disease—melitensis, abortus and suis—occurs naturally in this country and that all three types have been found in cattle. It expressed the opinion, however, that infection of cattle by other than the abortus species and infection by the latter from other than bovine sources is of comparatively little importance in the control of the disease.

It pointed out that calfhood vaccination is now officially authorized by the Bureau of Animal Industry of the U. S. Department of Agriculture and the decision as to where and when such vaccination should be employed lies with the live stock sanitary authorities of the various states.

The committee recommended the following procedure for employing calfhood vaccination as a preventive measure in the control of bovine brucellosis:

**THE NEW OFFICERS ARE INSTALLED**

**Dr. H. D. Port, Wyoming, retiring president, congratulates Dr. E. A. Crossman, Massachusetts, on his election to the presidency. Continuing to the right are: Dr. I. S. McAdory, Alabama, 1st vice-president; Dr. W. H. Hendricks, Utah, 2nd vice-president; Dr. J. M. Sutton, Georgia, 3rd vice-president; and Dr. Mark Welsh, Maryland, secretary-treasurer**

1. Upon electing to adopt calfhood vaccination as a means in the control and prevention of brucellosis, the owner shall be required to submit all animals in his herd over six months of age to an official blood agglutination test.

2. The officiating veterinarian shall be required to prepare a chart containing a complete record of each herd, each animal shall be properly identified, and the chart, together with such additional information as may be required, shall be submitted promptly to the cooperating state and federal officials.

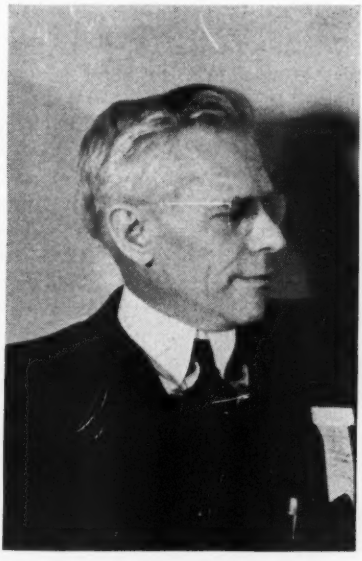
3. The vaccination of animals with Brucella vaccine (strain 19) shall be confined to calves between four and eight months of age. Six months is the preferable age. The age, date when vaccinated, and proper identification of each animal shall be indicated in the chart submitted for each herd under supervision in this project.

4. Each herd under state and federal supervision, for the control and prevention of brucellosis by the vaccination method, shall be subjected to at least one annual blood agglutination test.

5. No animal in a herd shall be disposed of for any purpose other than slaughter while revealing a positive or suspicious titre to an official test for brucellosis, except upon written permit from the proper cooperating state and B. A. I. officials.

6. A herd under the vaccinal plan may be certified as a herd free from brucellosis for a period of one year when all animals in the herd over two years of age reveal at least two negative reactions to official blood agglutination tests properly spaced, provided that all non-vaccinated animals under two years of age shall also be proved negative by test in accordance with the plan approved by this Association December 6, 1933, and the vaccinated heifers under two years of age in such herds shall show a satisfactory decline in titer, or be removed for slaughter.

7. At the expiration of such certification, certification may be renewed in accordance with the provisions contained in Article 6.



**A. J. DeFosset, Columbus, Ohio, was elected president of the National Association of Bureau of Animal Industry Veterinarians at a meeting of that organization held on the second day of the U. S. L. S. S. A. meeting**

## Rabies

The committee on rabies (H. W. Schoening, Chairman) rendered a long report recommending a federal-state program for the

H. W. Schoening, Chief of the Pathological Division B. A. I., was chairman of the Committee on Rabies

control of this disease, pointing out, however, that for such a program both federal and state legislation is necessary to grant authority and provide funds to carry on the work.

The committee also noted the desirability of federal legislation to give the dog a status equal to that of other live stock, since at present funds even if available cannot be applied to control of disease in dogs.

The provision of funds for the removal of stray dogs from a community in the opinion of the committee is an immediate necessity of the local control of rabies. It was suggested that all male and spayed female dogs be taxed $1.00 annually and unspayed females $2.00, and the sum so collected be made always available to the constituted authority charged with the control of rabies, to be used only for the removal of strays.

Pending action looking to the control of rabies on a national scale, the committee regards it as very important that satisfactory measures for control be adopted by the various states. While it regards hard and fast regulations as undesirable, it suggests the following nine-point program, to be modified where necessary to fit local conditions:

1. All dogs shall be licensed annually. The fee shall be at least $1.00 for a male, $1.00 for a spayed female, and $2.00 for an unspayed female.

2. The license tag issued when the dog is licensed must be affixed to the collar of the dog and worn at all times when the animal is on public property.

3. All unlicensed dogs or dogs not wearing license tags should be either humanely destroyed or impounded and disposed of as follows: Animals shall be kept 48 hours (or 72 or 96 hours) and if not claimed within that time shall be humanely destroyed. If animals are claimed by their owner and have not been licensed, such dog may be returned to the owner upon the payment of a license fee and a collection and maintenance charge of $2.00. Licensed dogs claimed shall be returned to their owner upon payment of a $1.00 collection charge. (In this connection it may be advisable to assess a penalty against the owner of the dog for violation of the dog regulations. It is also well to consider the possibility of rabies being spread through the return of impounded dogs to their owners and through the practice of selling dogs from the pound. Serious consideration should be given to these points, but they probably can best be handled as local conditions warrant.)

4. A sufficient full-time personnel shall be available to properly control stray dogs and unlicensed dogs as provided above.

5. In the event that rabies is reported or suspected in a dog, it shall be the duty of the official in charge to have determined definitely whether or not the animal is rabid. In the event that rabies is established, a thorough inquiry should be made immediately in so far as possible into the movements of the rabid dog so that all dogs known to have been bitten by or exposed to the rabid dog may be destroyed or kept in quarantine or otherwise treated as hereinafter provided. A quarantine of at least 60 days shall be placed over an area covering the possible movements of the said rabid dog. This quarantine shall provide that all dogs be kept on the premises of the owner, or, when upon public property, shall be held on a leash not over six feet long in the hands of a competent person.

Dogs not definitely known to have been bitten but which have had contact with a rabid dog may be kept in strict quarantine on the premises of the owner for a period of not less than six months. Such an animal in addition may be given a series of vaccination treatments by a qualified veterinarian. In this event the quarantine period may be reduced to two months. Dogs may not be removed from the quarantined area without specific official permission.

6. Funds: There shall be ample funds available for immediate use at all times for the proper carrying out of these regulations. These funds shall be consistent with the size of the

THE "POULTRY BOARD"

**Dr. Cliff Carpenter (standing) asked 95 questions of this group of poultry pathology experts for the edification of the audience. They are (left to right): Dr. F. R. Beaudette, New Jersey; Dr. W. R. Hinshaw, California; Dr. H. J. Stafseth, Michigan; Dr. Cliff Carpenter, Indiana; Dr. Erwin Jungherr, Connecticut; and Dr. J. Holmes Martin, Indiana**

community. In addition to this, there shall be set aside a sum of money for the specific purpose of controlling outbreaks of rabies as they might occur. This money shall be available at all times and shall not be used for any other purpose than controlling such outbreaks. This money might come from regularly appropriated state funds labeled for this specific purpose or from dog tax revenues or from any source as seems consistent with procedures in the state. In any event, it shall be available at all times in sufficient amounts to meet any expected need.

7. Personnel: Since rabies is an animal disease, the veterinary profession shall be represented in the personnel concerned with the control of the disease. The control of rabies in a state shall be fixed in an authority with power to work in any section of the state and to call for such local cooperation as may be feasible or desirable. In outbreaks in communities, due notice of such outbreak and quarantines that might be imposed shall be given publicity and in the several ways brought to the attention of the public at large and the dog owner in particular.

8. Vaccination: When thought advisable or desirable, prophylactic vaccination of dogs may be encouraged or advocated on a voluntary basis. Vaccinated dogs, however, shall not enjoy any special privileges because of such vaccination, since vaccination is considered to be only an adjunct in any program for the control of rabies.

9. The authority in the state charged with the control of rabies shall notify the authorities in the several states of outbreaks of rabies and their location as they occur, together with the date or dates the quarantine is lifted. All transportation companies in a state shall be notified of outbreaks of rabies and the quarantine regulations imposed governing such outbreaks.

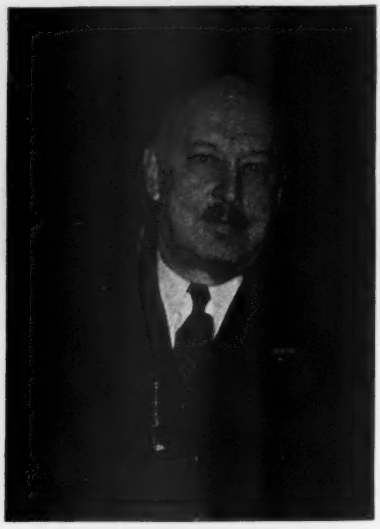
## The New Officers

Under election of officers, Dr. J. M. Sutton, State Veterinarian of Georgia, was added to the succession, i.e., was elected third vice-president. Dr. E. A. Crossman, dean of the School of Veterinary Medicine, Middlesex University, first vice-president, was advanced to the presidency; Dr. I. S. McAdory, Associate State Veterinarian of Alabama, second vice-president, was advanced to first vice-president, and Dr. W. H. Hendricks, State Veterinarian of Utah, third vice-president, was advanced to second vice-president. Dr. Mark Welsh, State Veterinarian of Maryland, was reemployed as secretary-treasurer.

In the following pages, abstracts or summaries are given of the more important discussions of general interest presented at the meeting:

# Proposed Policy Involving Official Recognition of Calfhood Vaccination[1]

As a result of disturbed world conditions sanitary officials in many states, as well as the federal government, are confronted



John R. Mohler, Chief of the Bureau of Animal Industry

with a problem of considerable proportions. The threat of an extended diversion of funds, ordinarily available for peacetime government functions but now required to meet the exigency of total preparedness, is an ever increasing probability. Under the extraordinary circumstances presented by this situation and in view of the potential possibilities of *Brucella abortus* vaccine as an aid in the control of brucellosis, it appears desirable to amend the present program to include calfhood vaccination as an adjunct to the test-and-slaughter method, in states where this procedure is desired.

An operative program to carry this procedure into effect should be simple and uncomplicated and the following general plan is proposed for this purpose:

1. All animals over six months of age in a herd under cooperative supervision, where the owner elects to adopt the vaccinal procedure, should be subjected to a blood agglutination test prior to the inauguration of such a program, and at least one test annually should be applied thereafter.

2. To facilitate matters in connection with the movement of animals in such herds, in addition to protection of the purchaser, a simple but complete record of each herd is absolutely necessary.

3. Vaccination should be confined to calves between four and eight months of age and this should be accomplished as nearly as possible during the sixth month of the animal's life.

4. The age of the animal and date of vaccination should be properly recorded and the identity of each animal should be properly established in each instance.

5. No animal in a herd where vaccination is practiced, should be disposed of for any purpose other than immediate slaughter while revealing a positive titer, except upon written permission by the cooperating state or Bureau officials.

6. A herd under the vaccinal plan may be certified as a Herd Free of Brucellosis for a period of one year when all animals in the herd over two years of age reveal at least two negative reactions to official blood agglutination tests properly spaced.

7. The subject of the joint payment of indemnity to owners of adult cattle that reveal a positive reaction to the blood agglutination test in a herd under the vaccinal procedure, is a matter that should depend upon the circumstances within a state. However, in instances where vaccinated animals over 2½ years of age (that were vaccinated between four and eight months of age) disclose a positive reaction and the owner desires to dispose of such animals, a joint payment of indemnity is recommended.

8. Owing to a variation of conditions in different states it appears, except for a general operative plan of procedure, that minor details in a program of this character are matters which should be delegated to the cooperating state and federal officials in each of the various states.

9. It must be appreciated no one method may be applicable to all types of herds. In some herds the disease must be eradicated as soon as possible in order that the herd may be maintained on a paying basis. In other herds, another method may be considered a more profitable and therefore a preferable procedure. In still other herds, a combination of methods may work as the best solution of the Bang's disease problems. The livestock officials in the individual states, governed by the desires of individual stock owners, should

[1] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by John R. Mohler, Chief, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

assume the responsibility of determining the manner in which their respective interests could best be served. Naturally these officials have the privilege of (1) continuing the test and slaughter method (2) adopting calfhood vaccination as herein outlined, or (3) using the latter as an aid by integrating it with No. 1. In other words, those who are two-fisted may prefer to use both fists and not have one handcuffed. When the Bureau is acquainted with the desires of the various states, its duty will be to cooperate to its fullest extent with those that express a desire to suppress this malady in their respective domains along any of the three lines mentioned.

## A Dairyman's Experience with Bovine Brucellosis[2]

The Adohr Milk Farms herds near Los Angeles comprise about 5,000 animals, one-third being Holstein and two-thirds Guernsey. About one-fifth of each breed is registered, the remainder grade animals.

The herd was established in 1917 and therefore the owners have had an experience of 24 years with brucellosis, for the first shipment of animals received when the herd was founded was spreading the disease when it arrived.

An attempt to eradicate the disease was begun in 1917. On the first test 35% of the cows reacted. Tests were repeated three to four times yearly. All reactors were immediately removed from the herd and segregated in another herd on the same farm some distance away. The herd was largely self contained. Replacements were in the main heifer calves reared on the farm. but some replacements were purchased.

After two years, it was obvious success would not be attained from the plan and the infected herd was moved to another farm several miles distant. Testing was at the same time stepped up to monthly. As the Adohr herd (the near-negative herd) was producing certified Grade A raw milk, every possible effort was made to eradicate the disease. Rigid sanitation was enforced, a separate maternity barn of steel and concrete was erected, containing 35 stalls, each with a separate drainage system. Rigid disinfection was employed.

[2] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940. by Maynard Rosenberger, Manager, Adohr Milk Farms, Tarzana, Calif.

Dean Charles Murray
Ames, Iowa

This was continued for eight years, till the end of 1936, by which time it was apparent that even with monthly removal of every reactor, eradication of the disease from this large herd was not possible. Often during breaks tests had been made at 15-day intervals. Economically the plan was a dismal failure.

In January 1937 vaccination (Strain 19) was commenced. Heifers were vaccinated between the ages of five and nine months. During the first year, 252 heifers were not vaccinated and may be regarded as controls. During 1939, abortions, premature calves, stillbirths and weak calves comprised 5.4% in the vaccinated and 5.2% in the unvaccinated group, i.e., there was no significant difference. However, only 0.6% of the vaccinated animals reacted to the agglutination test after calving, while 4.4% of the non-vaccinated animals reacted. These records apply to the Adohr herd. The calves both vaccinated and control were reared separate from the herd.

In the reactor herd all calves were vaccinated and were pastured with the dry and aborting cows. There, abnormal parturitions in the vaccinated animals totaled 6.2%. Notwithstanding they were in constant contact with infection only 4% reacted after calving.

Monthly testing of the Adohr herd is still being continued, but reactions have fallen to practically nil. Many of the vaccinated heifers from the reactor herd have been added to it without spreading infection.

The reactor herd now contains about 30% of negative animals (vaccinated) and in a few years may be practically clean.

All reacting cows in the infected herd have been vaccinated for three years. No appreciable good or harm has resulted from the vaccination of adult, reacting cows.

## A Beef Breeder's Experience with Bang's Disease[a]

The author has had an extensive experience as a breeder of purebred beef cattle.

In 1926 he started blood testing the herd under his control for brucellosis. Although the testing was continued for five years he was never able to eliminate the disease from the breeding cow herd which comprised approximately a thousand animals. All reactors were immediately transferred to a separate herd maintained on a farm some distance from the main herd. But each subsequent test in turn revealed new reactors.

Heifer calves from the main herd and from the infected herd were segregated when weaned (seven months of age) to make up a third herd which was built up on a separate farm. Little difficulty was experienced in building up a brucellosis-free herd with these calves. They were tested several times between weaning and breeding and periodically thereafter.

In 1932 the author undertook to build up and manage a purebred Aberdeen Angus herd in Maryland. He was convinced that safety lay in adding to the herd only open heifers, negative to the blood test. However, in acquiring the foundation stock circumstances were such as to make it seem desirable to purchase some heifers in various stages of pregnancy. All were bought upon the condition of passing a negative blood test, being held in isolation 30 days, and giving a negative reaction to a second test.

On reaching Maryland these cows were put into a pasture that had contained no cattle for five years. Within two months one aborted and testing was started. During the next 12 months 40% of the purchases reacted. A positive and a negative herd were immediately set up on different farms over a mile apart. All reactors were placed in the first. The other herd comprised all negative cows, all open heifers and all heifer calves born in either herd. Before going into the negative herd all calves (seven months of age) were held for 30 days in a "suspect unit." Of the calves born in 1939 only one gave a reaction in a low dilution (1:25). She was held in the suspect unit for a year and continued to

| Cow | Reaction 1933 | Reaction 1939 | CALVING RECORD 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | ++++ | ++ - - | A | | √ | √ | √ | √ | √ | √ | √ |
| 28 | ++++ | - - - - | A | | √ | √ | √ | √ | √ | √ | √ |
| 32 | ++++ | ++++ | A | √ | √ | √ | √ | √ | √ | √ | √ |
| 33 | ++++ | - - - - | | √ | √ | √ | √ | √ | √ | √ | √ |
| 34 | ++++ | ++ - - | √ | | √ | √ | √ | √ | √ | √ | √ |
| 42 | ++++ | ++++ | √ | A | √ | √ | √ | √ | √ | √ | √ |
| 59 | ++++ | ++ - - | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 63 | ++++ | - - - - | A | √ | √ | √ | √ | A | √ | √ | √ |
| 71 | ++++ | - - - - | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 76 | ++++ | - - - - | A | | √ | √ | √ | √ | √ | √ | √ |
| 77 | ++++ | + - - - | | A | √ | √ | √ | √ | √ | √ | √ |
| 81 | ++++ | - - - - | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 93 | ++++ | - - - - | | A | √ | √ | √ | √ | √ | √ | √ |
| 97 | ++++ | ++++ | √ | | √ | √ | √ | √ | √ | √ | √ |
| 115 | ++++ | - - - - | | | √ | √ | √ | √ | √ | √ | √ |
| 120 | 1937 ++ | - - - - - | | | | | | √ | √ | √ | √ |
| 165 | ++++ | + - - - | √ | √ | A | √ | √ | √ | √ | √ | √ |
| 209 | ++++ | - - - - | | √ | √ | √ | √ | √ | √ | √ | √ |
| 153 | - - - - | ++ - - | | A | | √ | √ | √ | √ | √ | √ |
| 228 | 1936 ++ - - | 1938 May ++ - - | 1938 Oct. ++++ | | 1939 Oct. - - - - | | | √ | √ | √ | √ |

[a] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by W. Alan McGregor, Manager, Andelot Stock Farms, Worton, Maryland.

react at this or a higher dilution, then was put in the reactor herd. Of the 1940 calf crop, one bull and one heifer reacted at 1:25 dilution. They are still in the suspect unit.

Only the best animals have been retained among the reactors. All others have been slaughtered. The accompanying chart shows the breeding record of 18 of the original purchases since 1932-33 and two added to the herd in 1936 and 1937 respectively. The check marks indicate living calves born, the "A's" abortions and the blank spaces failure to conceive. Considering these are high-priced animals of the finest of blood lines, the frightful waste of slaughtering them upon the original blood test is apparent. In nine breeding seasons the 18 original cows have produced 138 living calves or an average of 15⅓ calves per year—a breeding efficiency of more than 85% over the whole period. For the last three seasons it has been 100%.

It will be noted that of the 18, seven cows aborted their first calves only; one her second calf only; one her third only; and one her first and sixth calves. Thus there has been a total of 11 abortions among the 18 cows in nine years, of which eight occurred in the first year. It is interesting also to note that of these 18 cows all positive in 1933 only three were positive and five were suspects in 1939. Ten were negative. Of the 18, eight have not aborted at all and three have produced nine calves each in nine years. Note also No. 228. She was calved in the positive herd, remained a suspect till she reached breeding age, was placed in the reactor herd in 1936, calved normally in '37, '38, '39 and '40, and is now negative. The record of No. 120, the other member of the herd born on the farm, is similar to that of No. 228.

Notwithstanding this showing the author feels very insecure and he thinks a majority of breeders feel the same way. "We are building up highly susceptible groups of cattle that can be set on fire very easily." Recently he learned of a herd that had been accredited for five years. Only open heifers that had passed a series of negative tests had been added to it. "Out of a clear sky the disease hit him. When a neighbor has a break in his herd we begin to worry about our own. . . . We sell breeding cattle from our accredited herds and the buyer immediately has an outbreak of abortion and blames us . . . Trouble in cattle we sell becomes a nightmare.

"The blood test is not enough. It leaves us with susceptible groups which are in grave danger of reinfection. We need something to go along with the blood test and I believe vaccination is the answer."

## Progress of Brucellosis Control in the S. E. States[4]

In 1934 the brucella infection in the 12 southeastern states averaged 9.83%; the national average was 10.8%. By 1940, infection in the 12 southeastern states had been reduced to an average of 6.68% and in the whole country, to 7.86%.

It is too early in the history of brucellosis control to form conclusions, but definite trends are obvious. States having a high degree of infection in 1934 still have it in 1940. Where reductions have been made generally, they are found in states having a low initial infection.

Approximately 38% of the cattle in the 12 southeastern states are enrolled in brucellosis control programs. In the nation, the percentage is 28. In the conduct of the compulsory program, Florida herds not having at least three or more negative tests, are required to be tested at 30-day intervals. In herds where infection is high, the 15-day test is supplied.

After the first year of our compulsory program, we observed that certain herds readily became negative, while others despite all efforts, supervised cleaning and disinfection of premises, continued to show a high level of infection. The herds in which infection persisted were those to which large additions of cattle from other states were made. The herds which readily became negative were those producing their own replacements.

Our records of retests in 1938 show that approximately 10% of the cattle shipped to

[4] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by J. V. Knapp, State Veterinarian, Tallahassee, Fla.

Florida covered by health certificates and negative brucellosis test charts were positive upon immediate retest.

We permit herd additions to be made only in the following manner:

(1) The original herd must show two negative tests over a period of not less than 60 days.

(2) The herd additions must be isolated on arrival in Florida and show two or more negative tests over a period of not less than 90 days before they can be added to the herd.

Although the theory on which this requirement was based is good, its practical application works a tremendous hardship on our dairymen, and we are not overly optimistic of the ultimate result, and long for the day when we can be assured of receiving replacement cows from negative herds, or cows which have been vaccinated as calves.

## Phenothiazine and Anthelmintic Medication with Special Relation to Parasitic Diseases of Sheep[5]

Work on phenothiazine extending over two seasons has resulted in the development of highly efficient means of applying this anthelmintic to the actual control of parasitic disease in sheep. The use of a devised tablet form, easily administered in large doses to adult breeding stock, has resulted in the effective protection of lambs, without the necessity of treating the lambs themselves. Work designed to attain the utmost efficiency in the use of phenothiazine and other anthelmintic drugs is being continued in order to perfect the system of protection of spring pastures.

The amount of phenothiazine oxidized and absorbed from the alimentary canal of sheep has been found to approach 50% of the dose administered. Rapid distribution of the chemical throughout the tract is very necessary if high efficiency against Oesophagostomum is to be attained with regularity.

[5] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by W. E. Swales, Division of Animal Pathology, Dominion Department of Agriculture; Institute of Parasitology, MacDonald College, P. Q., Canada.

## The General Livestock Tuberculosis Situation[6]

The remaining two counties in California were added to the modified accredited area November 1, 1940. The work of tuberculosis eradication among live stock has continued to receive much public interest, especially at this time, due to the accomplishment of the completion of the work in California to a point where all counties could be placed in the modified accredited area. During the fiscal year ending June 30, 1940, tuberculin tests were applied to approximately 12,222,000 cattle, and 56,343 reactors were disclosed, or 4.6%, this being the lowest degree of infection reported as a result of all the tuberculin testing in any year since the work was taken up in 1917. The total cost to the states, counties, and municipalities for operating expenses and indemnity since 1917 has been about $183,580,000, and the cost to the federal government for the same purposes since that time has been approximately $89,516,000, or a total of $273,096,000. The value derived from the results of this great campaign to the country is difficult to measure. In the November 16 issue of the *Pennsylvania Farmer* there is an editorial on this achievement written by a gentleman who has always supported this campaign and has been very helpful by favorable publicity so generously furnished from time to time. In the last two sentences of his editorial, he says: "There is no way precisely to measure these things, no way to compare in dollars the costs and the benefits of the campaign for control. All we can say is that it has been successful, and it couldn't cost more than it was worth."

A considerable amount of time has been given to the problem of avian tuberculosis during the past year. In this activity it is always necessary to conduct considerable educational work, including the tuberculin testing of the poultry. The Federal Bureau of Animal Industry is producing a motion picture, with sound, on the subject of avian

[6] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by A. E. Wight, Chief, Tuberculosis Eradication Division of the Bureau of Animal Industry, Washington, D. C., President of the A.V.M.A.

tuberculosis, which it is believed will be beneficial to the poultry industry in combating the disease and thereby to other interests in guarding the health of the swine. Reports from packing houses showing the results of post-mortem examination of cattle and hogs are very helpful in locating centers of infection of this disease.

The live-stock owners, packers, dairy organizations, stockyard companies, commission agencies, farm organizations, public health officials, the public press, the radio, and many other agencies through their cooperation have been of great assistance in bringing about the present condition as far as bovine tuberculosis is concerned in this country.

## The Demonstration of Tubercle Bacilli from Tissues of Cattle Tested with Avian and with Mammalian Tuberculins[7]

Attempts were made to demonstrate, by culture methods and by the inoculation of guinea pigs, tubercle bacilli from the tissues of cattle that had reacted to avian or to mammalian tuberculins or to both of these products. The total number of cattle tested was 1,595, comprising 49 separate herds in South Dakota. Fifty-one animals reacted positively to the test and were slaughtered. Lesions considered at necropsy to be those of tuberculosis were present in 27 carcasses, so-called "skin lesions" only were found in nine while in 15 or approximately 29% no lesions of tuberculosis were observed. In 16 instances, all representing cattle in which lesions of tuberculosis were found at necropsy, tubercle bacilli were demonstrated. All strains were proved by animal pathogenicity tests to be of the bovine type. Although tuberculosis was present in the poultry on 15 of the 49 premises, the avian tubercle bacillus was not obtained from any of the tissues examined. The investigation as outlined embraces a study of 100 cases. A report of the completed study will appear later. From the incomplete data it is concluded:

1. Many cattle sensitized by bovine tubercle bacilli will react to avian tuberculin administered intracutaneously. However, the reactions are in most instances less pronounced to avian tuberculin than to mammalian tuberculin.

Alexander E. Wight, Chief of the Tuberculosis Eradication Division, B. A. I.

William H. Feldman, Division of Experimental Medicine, The Mayo Foundation

2. Among animals that react positively either to avian or to mammalian tuberculin, there occur a considerable number in which by the methods available the agent responsible for the sensitization cannot be determined or is obscure.

3. The possibility of factors other than tubercle bacilli being capable of sensitizing cattle to tuberculin should be reexamined.

4. The agent most frequently responsible for detectable lesions of tuberculosis in cattle is the bovine tubercle bacillus. The avian and the human types of the organism are of minimal importance.

5. Regardless of possible shortcomings, the intradermic tuberculin test when properly applied and intelligently interpreted remains the most reliable single method for the detection of infections of cattle due to the tubercle bacillus.

[7] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by William H. Feldman and Harold E. Moses, Division of Experimental Medicine, The Mayo Foundation, Rochester, Minn.

## Are "Horse and Buggy" Regulations Adequate in These Streamlined Days?[8]

The so-called 28-Hour Law which provides for unloading, resting and feeding animals at intervals on long shipments was enacted by the Congress 34 years ago. It is a humane measure and perhaps was designed principally to prevent unnecessary cruelty to animals in shipment. It has accomplished that purpose and also has effected a great saving to producers and shippers of live stock and to transportation companies. It has functioned as a sanitary or disease prevention measure also, since it has been shown that the incidence of disease, particularly shipping fever, is less in animals that are rested and fed on long journeys than it is in animals that are severely exhausted in shipment.

Those who drafted and secured the enactment of the 28-Hour Law a third of a century ago are to be commended. They should not be criticized for its shortcomings at the present time. It is exceedingly doubtful if any of us could draft a transportation law at the present time that will fit conditions 34 years hence. Transportation of live stock by motor truck was not a factor when this law was enacted. More than half the animals brought to our central markets are hauled there in trucks now. Since the 28-Hour Law does not apply to trucks, it means we have gone more than half way back to the old unregulated methods of cruelty and abuse.

The 28-Hour Law needs amendment to fit it to changed conditions. Neglect of feeding and resting, overcrowding, failure to keep records, evasion of state live-stock laws and regulations and all the abuses the 28-Hour Law was designed to correct are again occurring outside of the law. In the 1939 report of the Secretary of Agriculture the Chief of the Bureau of Animal Industry recommends the amending of the 28-Hour Law to make its provisions apply to live stock transportation by truck as well as by rail. This association should get squarely behind this recommendation of Doctor Mohler and work for its enactment at the forthcoming Congress.

[8] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by Ray L. Cuff, Live Stock Commissioner, Kansas City Stock Yards, Kansas City, Mo.

* * * *

## Field Tests of Crystal-Violet Vaccine for the Prevention of Hog Cholera[9]

A total of 12,572 pigs in 236 farm herds has been vaccinated with crystal-violet disodium phosphate vaccine. The immunity of 647 of these pigs, representing 8,499 hogs in

C. N. McBryde, B. A. I. Experiment Station, Ames, Iowa

166 herds, was tested by injecting 2cc of virulent virus into each pig. Of the virus-tested pigs 5.7% died, 11.6% exhibited severe reactions, and the remainder, 82.7%, reacted only very slightly, or more frequently not all, to a dose of virus otherwise usually fatal.

In the preparation of the vaccine the disease-producing property of the vaccine is completely eliminated, indicating that the virus is either killed or very markedly attenuated by contact with crystal-violet. Pigs treated with the vaccine show no visible reaction. There is no danger of introducing hog cholera on non-infected premises by its use.

Because it produces no systematic reaction the use of this vaccine should lessen materially the possibility or probability of post-vaccination troubles, for a very attenuated or killed virus does not tend to lower resistance or activate other infections as in

[9] Summary of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by C. G. Cole and C. N. McBryde, Pathological Division, B.A.I., Ames, Iowa.

W. R. Hinshaw, Division of Veterinary Science, University of California

the case of serum-virus immunization, where a live virus is used. This is indicated by the treatment of one herd in which there was definite evidence of enteritis at the time the vaccine was administered. However, further experimentation along this line is planned and a definite statement on this point is withheld for the present.

The absence of any reaction period following the administration of crystal-violet vaccine, with no apparent loss of appetite and no necessity for change of ration, provided a good one is being supplied, will have the advantage of insuring an uninterrupted gain in weight and this in turn should effect somewhat earlier marketing than in the case of pigs receiving serum-virus treatment, which may be followed by a more or less definite reaction period, characterized by anorexia.

The period or interval required for the establishment of immunity will undoubtedly constitute the most serious limitation in the use of the vaccine, for it would not, of course, be safe to use the vaccine when cholera is in a community. Nor would it be safe to use the vaccine on herds fed raw garbage for the same reason. The vaccine cannot, therefore, be expected to replace entirely the serum-virus method of immunization.

While the duration of the immunity following the use of crystal-violet vaccine has not, as yet, definitely been established, it seems to protect swine quite well up to the average Iowa market age, which is eight months. If gilts are to be kept over for breeding stock, they should receive a second treatment at the end of eight months or be given serum-virus treatment at that time.

## Eradication of Pullorum Disease From Turkey Flocks[10]

This is a progress report on a cooperative pullorum disease eradication project which the University of California entered into with the Ramona Turkey Growers Association in July, 1939. This Association is made up of growers living within a 50-mile radius of Ramona in San Diego County, an area where turkey eggs are produced almost every month of the year. In 1939-40 the 80 members had approximately 22,000 breeder hens and sold 600,000 eggs to midwestern and eastern hatcherymen.

The eradication program consists of testing all flocks by means of the tube method (1-25 dilution) at monthly intervals until a negative test is obtained; field supervision of the flocks; inspection of cooperative hatcheries; and frequent educational conferences with growers and other agencies. The program is patterned after the National Poultry Improvement Plan for the U. S. Pullorum Passed Grade and the aim of the project is to have all flocks on an unofficial status equivalent to that of the official status of the U. S. Pullorum Passed Grade.

When the 80 flocks (28,810 birds) were tested in the 1939-40 season 40 of them (8,718 birds) were free on first test. By the end of the season, 24 of the 40 infected flocks were free as a result of the retesting and culling program. There were by this time 68% of the turkeys and 80% of flocks which had had at least one negative test. This was accomplished by a combination of monthly testing and by culling of infected pens. The remaining 16 infected flocks were tested at monthly intervals throughout the hatching season, and the majority of eggs from these flocks were diverted to the cold storage trade as surplus eggs as another means of safeguarding the program. The fact that 600,000 eggs were sold to hatcheries in the midwest and eastern states without a single complaint of losses from

[10] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by W. R. Hinshaw and E. McNeil, Division of Veterinary Science, University of California, Davis, Calif.

pullorum disease is indication of the success of the program.

This year, 21,129 turkeys belonging to 58 growers who were in the 1939 program have been tested. Of these, 47 (17,181 birds) were free on first test. There were therefore 81% of the flocks and turkeys free on first test this year. This is in contrast to 50% of the flocks and 30% of the turkeys free on first test in 1939-40. Twenty-one of the 47 free-on-first-test flocks of 1940 were reared on premises which were infected in 1939. The owners of the 11 flocks which had infection on first test in 1940 have either sold their flocks or have had their flocks cleared by retest, and all flocks in the program this year will have the equivalent, but unofficial status of the U. S. Pullorum Passed Grade.

**Mark Welsh, secretary-treasurer of the U. S. L. S. S. A., deserves credit for the efficient organization of the program**

* * * *

## Listerellosis in Swine[11]

Our knowledge of the Listerella organisms dates from 1926, when English research workers isolated a member of the genus (monocytogenes) from rabbits and guinea pigs. Since the first report organisms of the same genus have been found in other rodents, sheep, cattle, man, chickens, foxes and swine; and in aborted bovine and ovine fetuses.

In cattle, sheep and swine, listerellosis causes chiefly a disturbance of the central nervous system. In all animals, infection causes a marked increase in the mononuclear cells of the blood.

The authors studied listerellosis in a small number of swine in two outbreaks in adjoining counties in central Iowa. Only suckling pigs were affected. The symptoms included incoordination, inability to stand, trembling, hurried respirations and movements of the jaws and neck as if the animal were attempting to grasp something. In other herds pigs weighing up to 150 lbs. were affected. The symptoms are suggestive but not pathognomic. Laboratory examination of the brain is required for definite diagnosis.

The mechanism of natural infection is unknown. Intracerebral injections of brain tissue from the pigs studied killed rabbits in 24 hours. Subcutaneous injection into pigs weighing 120 to 160 lbs. gave negative results, but into pigs weighing about 55 lbs. and into a sheep caused the disease after four to six weeks.

The authors regard listerellosis as a relatively rare disease in swine, but think this opinion may have to be revised when veterinary practitioners generally become more familiar with its characteristics and are alert to the possibility of its presence in attacks of puzzling etiology.

[11] Abstract of a paper presented at the 44th Annual Meeting of the U.S.L.S.S.A., December 4-6, 1940, by H. E. Biester and L. H. Schwarte, Veterinary Research Institute, Iowa State College, Ames, Ia.

**Benjamin Schwartz, Chief of the Zoological Division, B. A. I., explains everything to W. Henry Warren of the Sanitary Science Service, Kansas City**

## Still More Uninspected Meat to be Consumed

Spreading from the Middle West, cold storage locker plants are making rapid strides in the East and South, with a trend toward more complete facilities for processing and curing in the newer plants, according to government economists.

Particular interest is being shown in Washington in the comparatively new developments in home cold storage plants designed especially for farm use, which it is felt will supplement rather than replace the commercial and co-op locker plants. As the use of the home plants expands, the probability is seen that the commercial plants will be able to enlarge their activities in sharp freezing and processing of meats for storage in the farm units.—*Live Stock Producer.*

## New Sound Motion Picture Film on Meat

A new sound movie titled *"Meat and Romance,"* has been prepared by the National Live Stock and Meat Board in collaboration with the Bureau of Home Economics of the United States Department of Agriculture. It represents a definite well-planned endeavor to present the story of meat visually in colorful, interesting and easily understandable fashion to millions of persons engaged in educational work and in other fields. The information brought out in this film covers the high lights of results secured in 17 years of meat research sponsored by the Board at leading colleges and universities and the United States Department of Agriculture.

This new sound movie is 40 minutes in length and features an all-Hollywood cast. It is divided into four sequences which deal respectively with meat selection, meat cookery, meat carving and the nutritive and health value of meat.

The various scenes depict practical, everyday lessons that everyone should know. The wide range of meat cuts available, the use of the less-demanded cuts, the basic principles of preparing meat for the table and the correct method of carving meat are all brought out clearly and forcefully. In addition the new revelations concerning meat as a food which builds strong healthy bodies is stressed and an excellent play is given the recent research findings showing meat as the richest source of the B group of vitamins. The film is an appropriate one for showing at veterinary meetings. Application should be made to Mr. R. C. Pollock, General Manager, National Live Stock and Meat Board, 825 Old Colony Building, Chicago, Ill.

## Take Your Choice

The acid-alkaline vaginal injection method of securing female or male offspring has received much attention in the popular and some mention in the scientific press of recent months. At the annual meeting of the American Society of Animal Production in Chicago November 30th, Prof. Elmer J. Roberts of the University of Illinois gave a detailed report of his experiments with this method of sex control.

Doctor Roberts used 1800 rats in his experiments and uniformly obtained a heavy preponderance of female offspring by injecting a 3% solution of lactic acid into the vagina of the female immediately before mating. The use of a 5% solution of sodium bicarbonate in the same manner resulted in a large preponderance of male offspring. In the course of the experiment the process was reversed 23 times, i.e., females that had produced a high percentage of female offspring following acid douches were given alkaline douches and produced a high percentage of males, and vice versa. Doctor Roberts' conclusions were:

"These reversals, eliminating every possible variable factor except the solutions, came out in exact accordance with the solutions used."

Dr. John H. Quisenberry of the Texas A. & M. College reported having tried the same experiment on rats and the method failed to work; however, it worked on rabbits.

Dr. Leon J. Cole of the University of Wisconsin reported that this method of sex control had failed completely in his hands.

The scientific animal husbandmen attending the convention agreed only on the proposition that further studies must be made. And this brings us back to where we started.

# Veterinary Medicine in 1940

## Vesicular Exanthema of Swine[1]

Vesicular exanthema, which made its first appearance in California eight years ago, occurred from December, 1939, to June 30, 1940, to such an extent as to assume a serious economic aspect, occurring on 123 premises in 25 California counties, involving over 222,500 hogs (approximately one-fourth of all the swine in the state). Severe death losses were encountered in pigs three weeks of age and younger, and older animals received serious setbacks in growth and development.

Vesicular exanthema is an acute febrile disease caused by a filterable virus and characterized by vesicles on the snout, lips, oral mucosa, tongue, and feet, and on the teats of nursing cows. Affected animals may show lesions on all these sites, or on combinations of two or more. The vesicles range in size from two or three millimeters in diameter to a size sufficient to cover the entire top of the snout or the entire bearing surface of the pad. The average incubation period is 48 hours. Temperatures range up to 108°F., declining rapidly after the vesicles rupture. Vesicles upon rupture exude a clear fluid, leaving a raw surface which heals rapidly. Affected animals exhibit varying degrees of lameness, especially severe in heavy animals. In the initial stage of the disease animals refuse to eat and may squeal with pain when forced to move. Upon recovering, swine are immune to reinfections with the same virus for a temporary period the length of which has not been determined, but which appears to be at least one and one-half months.

The disease is clinically indistinguishable from foot-and-mouth disease in swine. In an initial outbreak, animal inoculation is necessary for differentiation. Foot-and-mouth disease virus is readily transmissible to guinea pigs and cattle, and is nonpathogenic for horses; vesicular exanthema virus does not affect guinea pigs and cattle, and mild "takes" are obtained in horses.

Little is known about the method of transmission of the disease. It may or may not be significant that in all but eight of the 179 premises affected since the first outbreak in 1932, garbage was being fed. In four of these eight (all of which were involved in the break last year), definite contacts with infected premises could be established. In the remaining four no contacts could be established.

Control measures at present consist of quarantining all animals on the premises involved until all active cases among swine on the ranch have subsided, the lesions completely healed, and no further evidences of disease remain; this usually requires from four to six weeks.

[1] White, B. B., 1940. Vesicular exanthema of swine. *J.A.V.M.A.* 97:762, pp. 230-232; 237.

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## Controlling Disease in Garbage-Fed Hogs[2]

The author's experience on this subject was gathered in Colorado and California, notably on the largest hog ranch in the world at Fontana, Calif., where he has been employed as veterinarian since 1925.

Garbage feeding of hogs represents the only economical method of garbage disposal, and it has developed into a rather extensive industry. There are certain problems of management and disease control peculiar to garbage ranches.

To insure the establishment of a properly-equipped plant with reasonable sanitation, municipalities, army posts, and others disposing of garbage on a large scale should give long-term contracts rather than annual contracts, so that the feeder is encouraged to make the necessary investment in equipment without fear of losing the contract the next year.

A ranch should be far enough from dwellings to avoid being a public nuisance. The ground should be sandy and sloping. The feed floors should be placed parallel to the natural fall of the ground, not across or at right angles, in order to permit the drainage to flow away. There should be a

[2] Guyselman, P. C., 1940. Controlling diseases and parasites in garbage-fed hogs. *J.A.V.M.A.* 96:754, pp. 18-23.

concrete gutter in front of the feed floor into which the drainage will flow; this should be strong enough and wide enough to support the wagon or truck used for feeding. Also required are a concrete wallow, a concrete platform for washing wagons and trucks, and a boiler to provide steam and hot water. Strict sanitation must be maintained throughout the premises.

The drainage may be diluted with irrigation water and used on vineyards or orchards for its fertilizing value.

Garbage-fed hogs should be finished for 30 or 40 days on grain mixtures to improve the quality of the pork.

*Trichinosis.*—It is accepted that the consumption of raw pork scraps constitutes the principal channel for the transmission of trichinosis. However, the hogs produced by the large garbage-feeders are not the only source of the disease; farm-raised hogs are usually fed garbage from the home. Therefore discontinuing large-scale garbage feeding would not control trichinosis.* Cooking the garbage kills the trichinae, but greatly reduces its feeding value,† so that enforced sterilization of garbage for feeding would make garbage-feeding unprofitable.‡ The author makes no suggestions as to how trichinosis is to be controlled without eliminating the feeding of raw garbage, but implies that until such time as a control program can be devised without detriment to the profits of the garbage-feeders,** statements about trichinosis in the popular press should be so worded as not to reduce the consumption of pork and thus injure the swine industry.

*Hog Cholera.*—On large garbage-feeding ranches, baby-pig vaccination is a necessity, since otherwise a certain percentage of pigs will contract cholera before they are old enough or large enough to be weaned.

After the trial of several methods of inoculation, the plan adopted at the Fontana ranch has been to employ a single inoculation of 5cc of virus and 22 to 32cc of serum, depending upon the size of the pigs, at an average age of five to six weeks. This method has been used for several years, and has been effective in controlling the disease. Hogs kept as breeding stock show no evidence of loss of immunity.

An important part of the method is the handling of the virus. The virus is shipped direct from factory to farm in 500cc bottles packed in insulated containers with dry ice in a box at the top, with a thermometer inserted to record temperature variations. On arrival at the farm it is stored in an electric refrigerator. When taken to the field it is placed in an insulated container with ice. A filler and rubber tube connect the original bottle with a 10cc syringe. As pigs are vaccinated at the rate of 250 to 300 per hour, the virus does not get warm and is not unduly exposed to light.

The author has also recently used B. T. V. and found that it produces a high degree of immunity.

*Foot-and-Mouth Disease.*—An outbreak of this disease on the Fontana farm was handled in the usual way and its spread thus checked.

*Vesicular Exanthema.*—An outbreak of this disease in 1935 was controlled through strict quarantine.

**The survey of important contributions to American veterinary periodical literature during 1940 is concluded this month with abstracts of articles in the fields of swine practice, small animal practice, poultry practice, the parasites of these animals, public health, nutrition, general therapy, and miscellaneous. Similar abstracts covering the fields of equine practice, cattle practice, and sheep practice, and the parasites of these animals, appeared in the December, 1940, issue, pages 698 to 721, inclusive.**

*The author's reasoning is faulty. The pork scraps that give the farmers' hog trichinosis are almost wholly from garbage fed hogs.

† This statement is not in accordance with the concept of nutritionists.

‡ No civilized country in the world except the U. S. permits the feeding of raw garbage. What garbage feeders really object to is the cost of cooking.

**This is the key to the trichinosis problem. When the profits of garbage feeders are subordinated to human life and the interests of the other 94% of the swine industry the trichinosis problem will be solved.

*Bronchitis.*—Bronchitis of young suckling pigs occurred one year in one of the three breeding units on the Fontana ranch. Various biological products were tried without any success, and the use of concrete in the lots with constant washing and disinfection also produced no beneficial results. The disease finally disappeared spontaneously after two years.

*Pneumonia and Gastroenteritis.*—Good sanitation is essential in controlling these diseases. When they are observed, garbage is withheld and bran mashes and green feeds are given until the acute attack subsides. Neither commercial nor autogenous bacterins or aggressins have proven beneficial. Animals which develop chronic symptoms following the acute outbreaks are placed in pens by themselves, where with access to soft feed a fair percentage recover, although many of these break at a later period and others are difficult to fatten or are condemned when shipped to market.

*Anemia.*—In pigs that are farrowed on concrete or wood floors, as is the case on many garbage ranches, anemia may assume serious proportions. A simple way to prevent the malady is to throw a shovelful of dirt into the farrowing pen every two or three days when the pigs are a few days old. Vaccination of pigs suffering from anemia is likely to be accompanied by numerous deaths.

*Mange and Lice.*—The application of an oil spray seems to be effective for the control of both mange and lice. Whenever the pigs are badly infested with lice, they are sprayed with oil at weaning time. If the infestation is slight, the sows are sprayed when the pigs are weaned. Two or three applications of the oil at 10-day intervals are usually required to eradicate mange in a herd.

Intestinal parasites are not a problem in garbage-fed hogs, as garbage is apparently an efficient vermifuge.

*Acute Enteritis.*—Acute enteritis of pigs two or three days of age is found commonly on garbage ranches. The writer has found no satisfactory explanation of the cause and no effective means of prevention.

## Listerella Infection in Swine[3]

Listerellosis, which has been identified in cattle, sheep, chickens, foxes and men, is of considerable importance in veterinary medicine, and increasing numbers of human cases reported suggests that it may become a public health problem.

H. E. Biester

L. H. Schwarte

Investigation of a number of herds of swine in Iowa presenting symptoms of a central nervous disorder resulted in the isolation of Listerella bacteria similar in morphology, arrangement and behavior to those isolated from sheep and cattle.

The disease in swine is characterized by varying degrees of incoordination, trembling, and a peculiar accentuated "stilted" gait of the forelegs. The temperature may be elevated. (These clinical manifestations may be present in other infections.) The greatest losses occur among young suckling pigs.

Post-mortem examination shows no gross changes. Histopathological studies of the central nervous system reveal a marked meningitis characterized by a severe monocytic infiltration. Many blood vessels, especially those in the region of the pons, show perivascular cuffings. Many foci of monocytic infiltration are found, and the monocytes in the circulating blood are increased. These are similar to the changes produced in connection with certain virus diseases,

[3] Biester, H. E., and L. H. Schwarte, 1940. Listerella infection in swine. *J.A.V.M.A.* 96:756, pp. 339-342.

and diagnosis depends upon isolation of the Listerella organism by bacteriological culture.

Until more is known about this group of infections, sick animals should be isolated and placed in comfortable quarters and nursed to avoid complications. The carcasses of sheep, cattle or swine that succumb to listerellosis should not be fed to swine.

## Coal-Tar-Pitch Poisoning in Pigs[4]

Spontaneous outbreaks of an uncommon disease in four separate herds of swine, resembling a disease reported twice before in veterinary literature, led to its investigation by the Illinois Agricultural Experiment Station. The disease occurred in the young pigs, the mature animals being apparently unaffected. Symptoms included inappetence, weakness, rough coat, tucked-up abdomen, and depression. Death occurred within a few hours in the animals which succumbed (10% to 20% of the young pigs). On autopsy the chief gross lesions involved the liver, resembling the degenerative hepatic changes encountered in pig anemia. Usually the liver presented a red and yellow mottled surface, and in the fatal cases there were gross degenerative changes throughout the organ. In the nonfatal cases on which autopsies were performed, the same lesions were present to a lesser degree, usually involving only the margins of the liver. Bacteriological examinations were negative.

Nutritional deficiencies, bacterial infection, plant poisoning, and lead and copper poisoning were eliminated as factors. It was found that on at least two of the farms, the pigs had access to pasture on which remnants of clay targets or expended clay pigeons were found; and it was later determined that the pigs in one of the cases previously reported were exposed to coal-tar pitch, one of the chief ingredients of clay-pigeon targets.

Experimental feeding of remnants of clay pigeons, and of commercial coal-tar pitch, produced a disease identical in symptoms, mortality and gross and microscopic degenerative liver lesions to the spontaneous disease. It was concluded that these spontaneous outbreaks of liver degeneration in pigs are probably due to coal-tar-pitch poisoning.

Robert Graham

## Nicotinic Acid and Necrotic Enteritis in Swine[5]

The results secured from six separate experiments indicated that necrotic enteritis of swine develops primarily as a result of nutritional deficiency, apparently of nicotinic acid deficiency. Rations supplemented with nicotinic acid prevented the development of necrotic enteritis in the same environment where pigs fed the same ration without supplement developed the disease. Also, additions of liver, yeast, and particularly of pure nicotinic acid to the rations of pigs already severely affected with this disorder produced remarkable curative effects. Cures were not obtained in cases which had progressed to the extent that organs other than the intestines were involved. It has not yet been demonstrated whether nicotinic acid will prevent the development of necrotic enteritis in the presence of massive infection of *Salmonella choleraesuis*.

The following supplements were found to have a curative effect: (1) Sixty to 100mg of nicotinic acid per pig daily, or one ounce to 380-410 pigs daily, given individually or mixed in the feed. (2) Dried bakers' yeast—two ounces per pig daily. (2) Dried brewers' yeast—one ounce per pig daily. (4) Fresh liver (beef, sheep or pig)—eight ounces per pig daily.

[4] Graham, Robert, H. R. Hester, and J. A. Henderson, 1940. Coal-tar-pitch poisoning in pigs. *J.A.V.M.A.* 96:755, pp. 135-140.

[5] (1) Davis, G. K., V. A. Freeman, and L. L. Madsen. 1940. The relation of nutrition to the development of necrotic enteritis in swine. *Mich. Agr. Exp. Sta. Bul.* 170. (2) Freeman, V. A., 1940. Necrotic enteritis shown to be associated with feed deficiency. *Berkshire News* 7.

## Castration of Boars under Chloroform Anesthesia[6]

H. C. H. Kernkamp

Castration of large boars can be done more easily and painlessly under chloroform anesthesia, and chloroform judiciously used is safe.

The animals are prepared by placing a rope noose over the upper jaw and then firmly securing the head to a strong post, usually in one corner of the pen. Clean, dry burlap is wound tightly around the jaws and fastened by a small rope or bandage. Chloroform is applied by the drop method. About two ounces is usually required. Surgical anesthesia with the animal assuming lateral recumbency is complete in one to three minutes. Following the operation the patient usually regains his feet in a few minutes.

Another method of administering chloroform anesthesia to large boars. Dr. John P. Turner uses the crate and leather muzzle as shown

Satisfactory drainage is important. The incisions should be lengthy and carried well anteriorly to the ventral portion of the scrotum. With the patient on his feet, the incisions are visible only at their posterior portions. Aftercare consists of cleanliness and exercise, i.e., the animal should not be confined in a pen or where there are dust or mud wallows. Placing in a pasture free from dust and mud wallows is ideal.

[6] Boyd, W. L., and H. C. H. Kernkamp, 1940. Castration of boars under chloroform anesthesia. *No. Am. Vet.* 21:5, pp. 287-288.

## Polyarthritis and Erysipelas in Swine[7]

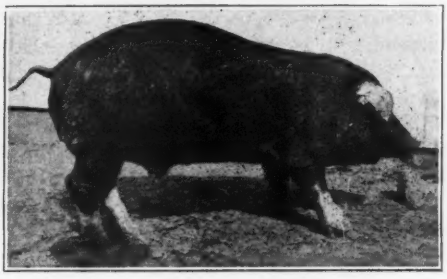
The first part of the paper includes pathological and bacteriological observations on nine pigs suffering from naturally-

**Swollen joints and evidence of pain on movement are commonly associated with swine erysipelas**

acquired polyarthritis, seven of which were collected from farms and two of which contracted the disease within a few days of being placed in contact with the arthritic animals.

Certain pathological features were common to all the above animals. The joint affection was a polyarticular non-suppurative arthritis of subacute or chronic form and this was associated with lesions such as pericardial effusion, pleurisy and lymphadenopathy. All failed to fatten and were stunted in growth. In two of the animals there was cultural and serological evidence of *E. rhusiopathiae* infection. In one, the organism was recovered from the pus of empyema and mediastinitis, and in another from a joint. Indirect evidence of swine erysipelas infection was furnished in four other animals by agglutination tests, but it was noted that the titers were not high. High titers were not always found even in the presence of infection, and it seems to fluctuate a great deal. In the case of one infected pig it ranged from 1:25 to 1:320. These observations confirmed the view that arthritis in pigs is frequently associated with swine erysipelas.

The second part of the paper consists of a study of arthritis resulting from experimental infection with *E. rhusiopathiae*. Eight pigs which were injected intravenously developed polyarthritis. Its onset was gradual, symptoms appearing in about six to nine weeks. The disease attained its maximum severity about six to eight weeks after it had first become apparent, and at this stage animals were severely crippled,



stunted and emaciated. The joints were swollen and movement was painful. Its gradual onset and prolonged activity followed either by resolution or permanent changes seemed to the authors to correspond very closely to the infective or rheumatoid forms of chronic arthritis in man. The joint lesions also showed macroscopic and microscopic similarities. The arthritis was mainly non-suppurative and there was never any extensive destruction of bone. The chief changes consisted of granulomatous proliferation of the synovial membrane, pannus formation and infiltration of the tissues with lymphocytes—particularly beneath the synovial lining where they often formed focal collections. Inflammatory changes in the sub-chondral bone, intra-articular fibrous adhesions, some superficial erosion of cartilage and fibrosis of the joint capsule were not infrequently seen.

The fundamental difference between swine and human arthritis is that the cause of swine arthritis is known, whereas we are still ignorant of the cause of human rheumatoid arthritis. In pigs the disease results from localization in the joints of micro-organisms brought by the blood, and these organisms can be recovered from the joints in certain stages of the disease. In the experimental animals, the proportion of positive joint cultures diminished with the passage of time and in comparatively few cases was the organism recovered after

[7] Collins, D. H., and W. Goldie, 1940. Observations on polyarthritis and on experimental Erysipelothrix infection of swine. *Jnl. Path. & Bact.* 50, pp. 323-353.

the 20th week. Although, in human arthritis, bacteria of etiological significance are not recoverable from the joints, it is doubtful if the joint tissues have been bacteriologically examined at a stage so early in the course of rheumatoid arthritis as that in which organisms are recoverable in swine erysipelas arthritis. It is possible that rheumatoid arthritis results from the localization of some organism in the joints and that these bacteria start tissue reactions which, as in swine erysipelas, continue in a chronic form after the organisms have been destroyed. Serological tests do not suggest that *E. rhusiopathiae* is in any way responsible for rheumatoid arthritis.

There was no evidence that either *Str. haemolyticus* or vitamin C deficiency was related to the development of arthritis in pigs.

## Development of Brucella-Resistant Strains in Swine[8]

Although there is much evidence that genetic factors play an important role in disease, the development of strains resistant to disease has not been practiced with live stock to such an extent as with plants.

During some experimental work on swine abortion, two sows and a boar were encountered which were resistant to infection with *Brucella suis* (the boar to a less degree than the sows). A breeding program was initiated to determine whether this is a genetic resistance which can be transmitted to the progeny. Preliminary results indicate that it is. Of 33 progeny of the resistant sows mated to the semi-resistant boar, 24 were resistant to infection by oral administration, as judged by the agglutination test; nine reacted at a titre of 1:25, and four at a titre of 1:50. Thirty-four controls from unselected stock showed only three resistant under the same conditions; 31 reacted at 1:25 and 12 at 1:50.

This experiment is still in progress, but the preliminary results are definitely encouraging. It should be kept in mind that breeding for disease resistance is not the same as breeding for vigor and vitality. The animals that appear most vigorous are, many times, the first victims of certain infections. There is no definite unit of measurement to determine the vigor or vitality of an animal. It is indicated in general terms only, such as healthy, sturdy, thrifty and in young animals by the rate of gain. The resistance to infective organism, i.e. an actual test, is the only measure of genetic disease resistance. It is not indicated by any physical characteristics of the animal.

[8] Cameron, H. S., E. H. Hughes, and P. W. Gregory, 1940. Studies on genetic resistance in swine to Brucella infection. *Cor. Vet.* 30:2, pp. 218-222.

## Nontoxicity of Lead Arsenate for Swine[9]

Acute poisoning of sheep and cattle has resulted from engorgement with forage containing high concentrations of lead-arsenate-spray residue. The possible hazard to swine in feeding them moderate amounts of sprayed fruit (a common economical practice in regions where apples and pears are raised commercially) was therefore investigated. A pig fed sprayed apples daily for 140 days, receiving the equivalent of 1.47gr of arsenic and 3.2gr of lead a day, showed no ill effects, indicating that the tolerance of swine to lead-arsenate-spray residues is high.

**See also in VETERINARY MEDICINE:**

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[9] McCulloch, Ernest C., J. L. St. John and Kermit Groves, 1940. Moderate amounts of lead-arsenate-sprayed apples noninjurious to swine. *J.A.V.M.A.* 97:760, pp. 51-52.

## Some Nutritional Disturbances in Small Animals[10]

*Anemia.*—Anemia may result from a decrease in the volume of blood, in the number of erythrocytes, or in the hemoglobin. The cause may be hemorrhage, faulty nutrition, parasitisms, chronic infectious diseases, malignant neoplasms, chemical poisoning, chronic liver and kidney diseases, chronic gastrointestinal disturbances, lack of sunlight, hyperlactation, etc. The treatment obviously depends upon the primary etiological factor. After appropriate treatment has been instituted for control of the primary etiological factor, the clinical treatment for controlling the symptoms of anemia is primarily the same.

In controlling external hemorrhage, compression bandages should be used if possible. Topical application of hemostatic powders or solutions often is beneficial. Small doses of epinephrin or similar agents are good stimulants and also constrict the smaller blood vessels.

Direct blood transfusions from a healthy donor give excellent results; an indirect transfusion of citrated blood is usually as beneficial and is more suitable in veterinary practice. The intravenous method is preferred. In the event of shock, epinephrin or related drugs often save the life of the patient if administered intravenously in small doses. The use of hypodermic hemostatic solutions and of large volumes of saline solution are also indicated.

After the need of emergency treatment has subsided, blood-building materials such as liver extract and liver concentrates, should be given. Fresh liver and an adequate amount of protein should be included in the diet. Copper and iron concentrates are beneficial.

*Eclampsia.*—This condition occurs in female dogs or cats before, during, or after parturition. It is probably a hypocalcemia, with perhaps an associated vitamin D disturbance. The symptoms vary in severity from mild convulsive attacks manifested by champing of the jaws and slight salivation, to severe attacks in which the patient lapses into a coma with obliteration of reflexes and slowing of respiration and heartbeat. The average case presented for treatment is the bitch with a large litter about five to 10 days after parturition.

D. A. Smith demonstrates canine surgery at a veterinary conference

Parenteral calcium agents used in doses of 10 to 40cc have been found efficient. These may be administered intravenously, intramuscularly, or subcutaneously. Caution should be used in intravenous injection because some patients are subject to calcium shock. Intramuscular or subcutaneous administration will usually suffice except in severe cases, when death may occur before absorption is accomplished.

To prevent recurrence, calcium and associated minerals with vitamin D must be given in such a form that they can be quickly and adequately assimilated. Thyroid products are sometimes indicated.

*Posterior Paralysis.*—The type of posterior paralysis that has a nutritional origin is usually found in household pets which appear to be in good physical condition. The history is usually that the appetite has recently been impaired and one or both rear legs have been weak. An arching of the back is sometimes observed. As the con-

[10] Smith, Dwight A., 1940. Clinical aspects of some nutritional disturbances in small animals. *J.A.V.M.A.* 96:757, pp. 515-517.

dition progresses, paralysis occurs in both legs, the tail becomes paralyzed and incontinence occurs.

Treatment includes evacuation of the intestinal tract to remove any possibility of autointoxication, and the addition of a diuretic for one or two days is often beneficial. Thiamin chloride usually effects a recovery. The suggested dose is 300- to 600-unit doses hypodermically, repeated once or twice daily for the first few days, then supported by oral administration of vitamins. The addition of calcium and thyroid products also is indicated. Usually symptoms will disappear within 48 to 72 hours; however, stubborn cases may persist for weeks, and finally recover.

## Kaolin in Alumina Gel for Intestinal Inflammation in Dogs[11]

Kaolin has long been used in the treatment of dysentery and related conditions for its effect in adsorbing bacteria and irritant substances. The adsorptive effect is enhanced if the surface exposed is increased by dispersion of the kaolin in an appropriate substance.

In a series of 26 cases involving intestinal inflammation the author used a colloidal suspension of kaolin in alumina gel in addition to other treatment indicated for the specific cases. Seven parts of the kaolin suspension was mixed with one part of mineral oil and administered orally in one-ounce doses every half-hour to vomiting dogs; after vomiting ceased, or if it was not present, the dose was one ounce every hour for dogs weighing up to 25 pounds, and one to three ounces every hour for larger dogs. In cases of enteritis, enemas consisting of the kaolin suspension mixed with an equal volume of mineral oil, at body temperature, were given two or three times daily, not more than two ounces being injected slowly at one time.

From the results obtained in these cases, the author concludes that the colloidal suspension of kaolin in alumina gel is a valuable adjunct to treatment in cases involving intestinal inflammation.

[11] Manges, J. D., 1940. The use of a colloidal suspension of kaolin in alumina gel in the treatment of intestinal inflammation in dogs. *J.A.V.M.A.* 96:756, pp. 404-405.

## Relation of Bacterial Foci to Canine Pathology[12]

A focal infection is an area of tissue infected with pathogenic organisms capable of producing secondary foci in different parts of the body. That focal infection plays a part in certain systemic diseases is a well-established fact.

Focal infection is a chronic process beginning in some epithelial defect, later involving remote parts of the body by establishing new bacterial colonies or by toxemias, caused chiefly by streptococci and sometimes by staphylococci.

The throat is a common starting point of respiratory infections. Removal of the tonsils may cure such infections and prevent their recurrence. Perhaps a great deal of canine ear trouble may be due to infected tonsils. Tonsils may be one of the foci in which the repeated "low-grade infections" occur.

Since dogs do not expectorate but swallow bacteria and their products coughed up, respiratory infections may set up also severe irritations of the intestinal tract.

Acute nephritis in old dogs may be associated with chronic tonsillitis of pyogenic or streptococcic origin. It is usually manifested by albumin in the urine, edema of the eyelids, and dry, lifeless skin.

Tonsillar infection often is related to: (1) arthritis, which is particularly common in older dogs; (2) nonsuppurative otitis media, found in hunting dogs with large ears; (3) iritis, chorioiditis in dogs with protruding eyes, such as the Boston and Pekingese; (4) bronchial pneumonia as a secondary infection, probably as a result of aspirating the infecting material; and (5) recurrent vomiting, frequently found in Bostons. Removal of the tonsils in this breed often corrects the persistent vomiting.

There is some question as to whether or not prostatitis occurs as a primary focus.

Infection about the apices of the teeth is not, as a rule, a common source of focal infection in the dog, but it does occur frequently in the cat.

[12] Smith, H. C., 1940. The relation of bacterial foci to canine pathology. *J.A.V.M.A.* 97:762, pp. 238-246.

When material becomes lodged in the ducts of the anal glands, it acts as a foreign body irritant and causes occlusion, resulting in suppuration and absorption of the toxic material. The glands then become natural incubators and fertile sources of infection. They probably are the most frequently overlooked source of focal infection present in the dog. Therefore, all veterinarians should include a thorough examination of these glands when dogs are presented for examination and treatment.

The role of focal infection is generally recognized in the causation of systemic diseases, but what is not so well known is that the toxins liberated by the bacteria in a focus of infection may, without producing pathological changes, give rise to symptoms similar to those occurring in organic diseases.

The manner and time of treatment of a focus depend upon the judgment of the veterinarian. As a rule, however, the course to pursue is proper drainage at the proper time, if possible, and the institution of such measures as will improve the health of the animal by care and feeding.

## Neoplasms in Dogs[13]

In a group of 4,155 dogs observed at the author's clinic, the neoplasm incidence was 2.3%, the majority being in dogs eight years of age or older. Tumors of the skin were the most prevalent.

One-third of the skin tumors observed were of the type known as round-cell sarcoma. This is usually intracutaneous, from one to three centimeters in diameter, and one-half centimeter in depth. The surface is dome-shaped and, in advanced cases, hairless, red, and exudative. The cut surface is white or grey and firm. No capsule is present. They usually occur on the extremities. Growth is rapid. If untreated, rapid metastasis may occur.

Early treatment by excision or freezing with ethyl chloride is usually effective. If the diameter of the neoplasm has increased beyond two centimeters, the chance of recurrence or of metastasis increases in direct proportion.

[13] McClelland, Robert B., 1940. Neoplasms in dogs. *Cor. Vet.* 30:2, pp. 161-166.

## Cysts of Dogs[14]

A cyst is a circumscribed cavity separated from the surrounding tissues by a connective tissue membrane or capsule, or one or more complete structures, the contents

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of which are different from the capsule or sac. The author discusses the more common varieties encountered in veterinary practice.

*Retention Cysts.*—A retention cyst may form in any gland which has an open duct whenever any part of the duct is obstructed so that the secretions are retained with consequent accumulation and distention of the duct or gland. Cysts of the sebaceous glands are most common; they may occur upon any part of the body in which there are sebaceous glands or hair follicles. They are fairly hard, smooth, painless swelling which grow rather slowly and, unless infected or injured, cause no pain. Treatment consists in removing the entire sac, preferably without opening it. Simple expression of the contents gives but temporary relief. When it is not possible to remove the entire sac by dissection, any remaining portion should be cauterized with phenol followed by alcohol or tincture of iodine, or packed and made to heal from the bottom.

Two forms of retention cysts deserve special attention. (1) The chalazion is a cyst of a meibomian gland, appearing as a

[14] Milks, H. J., 1940. Cysts of dogs. *Cor. Vet.* 30:2, pp. 223-230.

small elevation upon the upper lid. It may be removed from either side of the lid; it is probably better to evert the lid, incise through the cyst, and thoroughly curette the membrane. (2) Interdigital cysts are located in or under the skin between the toes, and are usually very painful. As the condition develops the part suppurates and ruptures, exuding a bloody pus. The soreness then disappears and the wound heals, but the lesion soon returns unless the sac has been removed by caustics or dissection. The treatment of choice is to open these cysts when they are swollen to their greatest extent but before they have ruptured, and apply tincture of iodine to their entire wall. If the cyst has ruptured, either attempt to remove the wall by dissection, or give some palliative treatment and ask the owner to return the animal at the next recurrence before rupture occurs.

*Cysts of Anal Glands.*—The symptoms caused by impaction of the anal glands are well known. Temporary relief may be obtained by expressing the contents. Abscessed glands may be drained and allowed to heal, but it is better to cauterize the walls of the pouches with iodine or phenol, or to remove them by dissection in order to prevent recurernce.

*Mucous Cysts.*—These are most frequently observed in the mouth and on the tongue. Treatment is the same as for sebaceous cysts.

*Cysts of Ducts.*—The only important ones are those of the salivary glands, caused by some mechanical obstruction. The obstruction should be removed if possible; otherwise it is necessary to make a new opening or transplant the duct. The cysts should never be opened from the outside, since a permanent sinus will form which requires either transplantation of the duct or destruction of the gland.

A ranula results from obstruction of ducts of the sublingual glands. It appears as a translucent, bluish, thin-walled mass under the tongue. Three methods of treatment are available; remove the entire cyst and gland by dissection; make a button hole in the sac; or place two or three heavy silk or linen sutures through the capsule into the cyst and out again, tying loosely, so that the contents may escape and a new opening form as the sutures cut their way out. This latter method has proved very successful in the author's experience.

*Embryonal Cysts.*—These are congenital cysts resulting from malformation of the embryonic branchial clefts or ducts. Branchial cysts are usually below the ear extending downward to the under part of the jaw; they are soft, fluctuating, painless, and do not inconvenience the animal much. They are differentiated from abscesses by slow growth and absence of inflammation. Unless the cyst has been opened previously, the prognosis is good. Total excision gives the best results. Make a longitudinal incision through the skin and underlying tissues down to the wall of the sac and carefully separate the sac from the other tissues by blunt dissection. The large blood vessels and nerves must be freed from the cyst and held to one side until the operation is finished. Hemorrhage may be profuse and arrangements must be made previous to the operation to take care of it. If the cyst should be accidentally opened during the dissection, one must remove as much as possible and endeavor to destroy the remainder with phenol followed by alcohol or by using tincture of iodine [If these cysts are first carefully opened and packed with cotton it facilitates their removal]. The wound is closed with mattress sutures and a rubber drainage tube placed in the wound prior to bandaging the part.

**A Submaxillary Cyst**

## Enteritis in Dogs[15]

The causes of enteritis may include: dietetic factors, irritating substances, and lowered resistance secondary to other disease conditions—principally parasitism and distemper. Catarrhal enteritis is the commonest form.

L. W. Goss

The most important factor in enteritis is the accumulation of toxic material within the body at a rate of production which exceeds its elimination. Lowered vitality allows the normal intestinal flora to change by multiplication of the more pathogenic type of organisms. The toxic substances produced by these organisms are irritating to the epithelial cells lining the intestinal tract and cause congestion of the mucous membrane. The protective epithelial cells may undergo progressive degeneration, exposing the underlying blood vessels to the toxic material, which is absorbed by osmosis and diffusion. The toxic material is then carried to other parts of the body, and may cause extensive damage in the liver and kidneys, the conjunctivae, the mouth ("blacktongue"), the skin (dermatitis or eczema) the bronchi (chronic bronchitis), or the central nervous system.

Anesthesia is contraindicated in dogs suffering from enteritis, since larger quantities than normal are necessary for absorption by the intoxicated tissues, and the drug administered is eliminated more slowly—a combination which may result in a fatality in what would normally be a minor operation.

Treatment of enteritis should be directed toward removing the underlying cause and fortifying the resistance of the tissue.

[15] Goss, Leonard W., 1940. Enteritis in dogs and some of its complications. *J.A.V.M.A.* 96:759, pp. 724-726.

## Treatment of Hypertrophy of the Canine Prostate Gland[16]

Highly satisfactory results in the treatment of hypertrophy of the prostate gland in the dog are obtained by removing the testicles. This is done under nembutal anesthesia. All hemorrhage must be permanently controlled or a hematoma will develop and lead to serious complications. A lapse of about four weeks is required for the hypertrophied gland to evacuate its pus through the urethra and shrink to normal puppy size. Precautions to avoid constipation should be continued until recovery is complete.

* * * *

## Treatment of Impotence in the Dog with Male Hormone[17]

The etiology of impotence (here defined as inadequate penile erection) is varied, and therapy must be directed toward correction of the cause. After other causes (such as immaturity, senescence, congenital defects, local disease or injury of the genital organs, debilitating systemic disease, dietary deficiency, etc.) have been eliminated, one may rightfully suspect male hormone deficiency as the cause, and institute treatment on that basis, injecting male hormone substance.

For dogs weighing over 30 to 35 lbs., give 25mg of testosterone proprionate (perandren) as the first dose, and on each of the two succeeding days, give 10mg; for dogs under that weight, 10mg daily may be sufficient. A daily attempt at breeding should be begun on the second day of therapy. If there is no evidence of improvement within 48 hours after the fourth daily dose, one should begin to suspect some more occult etiology, such as a nervous system lesion.

The authors have found this therapy valuable in a number of cases, and suggest its further trial, in both dogs and other animals.

[16] Herman, A. A., 1940. Treatment of hypertrophy of the canine prostrate gland. *J.A.V.M.A.* 96:757, pp. 547-548.

[17] Engle, J. B., and R. MacBrayer, 1940. Impotence in the dog: its treatment with male hormone substance. *J.A.V.M.A.* 97:761, pp. 158-161.

## Neoplasms of the Mammary Gland in Dogs[18]

Mammary tumors are more frequent in the dog than in any other species of animal. A large proportion of them are so-called mixed tumors. They usually occur in dogs of advanced age and are progressive. If left undisturbed many become unsightly ulcerating masses. Some are definitely malignant and metastasis to other organs occurs. Surgical treatment is sometimes inadvisable because of the dog's poor condition.

Chronic mastitis, together with a hereditary predisposition, seems responsible for the development of some benign and malignant mammary tumors. A functioning mammary gland seems essential to their development. Mammary tumors do not develop in spayed bitches and many tumors of the mammae decrease in size or disappear if the bitch be spayed early in their development.

No treatment of mammary tumors in the dog is entirely satisfactory, but surgical removal of the affected gland (including the tumor) gives the best results. The operation should be performed early while the tumor is still small; however, recovery frequently follows removal of large or multiple tumors. The marasmic condition is the principal bar to operation. Operation should not be advised against simply on grounds of advanced age.

The author has developed an operative technic based upon the lymphatic circulation of the udder. Taking the typical udder consisting of five pairs of mammary glands and numbering them 1 to 5 from before backward, the surgical procedure contemplates: (1) If on either side gland No. 1 only is affected. Remove it and the axillary lymph gland on the same side. (2) If the

[18] Schlotthauer, Carl F., 1940. Neoplasms in the mammary gland in dogs, their pathology and surgical treatment. *J.A.V.M.A.* 96:758, pp. 632-640.

Doctor Schlotthauer Operating on a German Police Dog at a Clinic in Omaha

tumor involves either gland No. 2 or gland No. 3. Glands No. 1, 2, and 3 and the axillary lymph gland on the same side are removed. (3) If either gland No. 4 or gland No. 5 is affected, both are removed together with the corresponding inguinal lymph gland.

There being no communication between the lymphatic systems of the two lateral halves of the udder, only the affected side is invaded surgically.

## Cesarean Section in Dogs[19]

The indications for cesarean section are given as follows:

1. Small maternal pelvis or large fetal head
2. Deformity of the pelvis of the mother because of fractures or as a result of rickets
3. Tumors in the uterus or vagina
4. Stricture of the vagina
5. Persistent hymen, or persistent pillars in the vagina
6. Metritis
7. Death and putrefaction of the fetuses
8. Abnormally large fetuses and monsters
9. Known cannibalism on the part of the mother.
10. Inguinal hernia with incarceration of the uterus
11. Malpresentation of the fetus
12. Failure of the fetal membranes to loosen
13. Uterine inertia

This operation is required most frequently in the breeds with relatively large heads and small pelves—Boston terrier, French bull, English bull. It is less common in the smallest breeds—Pekingese, Pomeranian, etc.

Among the foregoing, stricture of the vagina is rare and dystocia due to tumors in the vagina and persistent hymen may be overcome by operation upon the abnormal part.

The prognosis depends upon the factors necessitating the operation. If they be mechanical causes, the prognosis is good. If the operation is necessitated by infection, the prognosis is much less favorable. Generally in Boston terriers the prognosis is good, in hounds poor.

[19] Stephenson, H. C., 1940. The cesarean operation in dogs. *Cor. Vet.* 30:3, pp. 331-340.

A basal anesthetic of only 1/16 to ⅛gr of morphine is given. Following this local anesthesia—procaine—is employed. The abdominal incision is made in the flank. The incision in the uterus is made close to the bifurcation and near the middle of the ventral surface of the horn.

## Canine Pyometra[20]

Pyometra is the condition which exists after the cervix closes, sealing the uterus and causing it to fill with the purulent discharges from a diseased endometrium. Chronic forms of metritis may result in pyometra whenever the cervix becomes closed from any cause. The condition is most common in bitches five years of age or older and which have never been bred.

A bitch is somewhat emaciated, with a more or less distended abdomen. The coat is rough, dry, and harsh. Anorexia and depression are frequently present. Vomiting and diarrhea are encountered in the more advanced cases. The vulva is usually enlarged and there may or may not be a slight vaginal discharge. Abdominal palpation reveals a distended uterus.

The temperature may be normal or may range as high as 105°F. It is therefore of no value in diagnosis; but it is a valuable guide to prognosis, since most cases having a normal temperature can be treated successfully, while a majority of those with a high temperature die following treatment, or before treatment can be administered.

Panhysterectomy is the most effective treatment. Cervical dilation in conjunction with pituitrin may afford temporary relief, but does not effect recovery. Oral administration of desiccated hypophysis is useless, as is tapping the uterus through the abdominal wall. The value of the use of gonadotropic hormone and progestin is doubted.

Following the operation, patients are kept on a liquid or semi-solid diet for the first 48 hours, supplemented with dextrose and saline solution (300 to 500cc daily, administered intravenously). Recovery is usually rapid.

[20] Engle, Joseph B., 1940. Pyometra. *No. Am. Vet.* 21:6, pp. 358-360.

## Sulfapyridine in Small Animal Practice[21]

Sulfapyridine was used in the treatment of 18 dogs suffering from pneumonia (five primary, two secondary to post-parturient metritis, and 11 secondary to distemper); two dogs with tonsillitis, and one with post-parturient metritis. After experimenting with different doses, the results indicated that the drug is highly effective in septicemic diseases of dogs when given in initial daily dosage of 1gr per pound of body weight, divided into four doses, decreasing the dose 50% each succeeding 24 hours, and continuing the use of the drug for at least 48 hours after the temperature reaches normal.

Larger doses resulted in toxic symptoms (weakness and irritability), and in one case anemia resulted. Smaller doses were ineffective.

In the dosage recommended, nausea is sometimes encountered, but this can be controlled by the simultaneous administration of an equal amount of milk sugar.

Blood studies indicated that there is no great change in the blood cellular elements at the recommended dosage during the time required to complete treatment, and the course of administration is so short that there is little risk of kidney damage.

* * * *

## Sulfanilamide in Small Animal Practice[22]

The author has used sulfanilamide successfully in the treatment of streptococcic tonsillitis and in the treatment of infected wounds, in the latter case applying the sulfanilamide powder directly to the wounded surface.

Ideally, dosage of sulfanilamide should be closely regulated for the individual, maintaining a blood-sulfanilamide level of 1:5000 to 1:10,000. However, few practitioners have the necessary equipment to make the continuous laboratory tests necessary to obtain this desideratum. The author finds that using the body weight as a guide is adequate for all practical purposes. He uses the following schedule: 1gm per 10 lbs. of body weight for two days; 0.65gm per 10 lbs. of body weight for three days, and 0.32gm per 10 lbs. of body weight for about five to seven days. On occasion, larger doses are given without toxic symptoms in most cases. When toxic symptoms do occur (unsteady gait, weakness in the hind legs, vomiting, cyanosis), the drug is discontinued and the symptoms disappear in about 24 hours without leaving any ill effect. Treatment can be resumed in 48 hours with smaller doses.

In treating wounds by direct application, the infected area is cleansed and the sulfanilamide powder applied liberally and covered with a bandage.

* * * *

## Control and Prevention of Rabies[23]

The evidence indicates that there has been an increase, in recent years, in the prevalence of rabies in the United States. The incidence of rabies in man is low, but it is a horrible and much dreaded disease, and the public is not interested in its low incidence once it makes its appearance in a community, but wants it promptly brought under control and eliminated.

Vaccination against rabies in dogs has been employed in this country for 18 years and altogether a great number of dogs has been vaccinated. The records of the use of rabies vaccine are not as complete as they should be but such as they are they demonstrate conslusively that it has value.

Rabies vaccine is subject to the faults of tissue vaccines generally. It is apt to contain an insufficient amount of killed virus. The author advises increasing the dose of vaccine and giving three injections at weekly intervals instead of a single injection.

The recent findings of Webster do not justify the interpretation put upon them in the opinion of the author. He thinks the justifiable conclusion from Webster's work is that it is possible to immunize against rabies with vaccine.

For the present, as in the past, vaccine should be considered as an adjunct to other measures in rabies control.

[21] Ketchersid, James R., 1940. Clinical studies of sulfapyridine in small animal practice. *J.A.V.M.A.* 96:758, pp. 661-662.

[22] Ecker, W. R., 1940. Sulfanilamide in small animal practice. *J.A.V.M.A.* 97:760, pp. 49-50.

[23] Kelser, R. A., 1940. Measures for the control and prevention of rabies. *Cor. Vet.* 30:3, pp. 321-330.

## Leptospirosis in Dogs[24]

Leptospirosis in dogs is becoming more prevalent on the west coast. The disease is more common in the fall and winter. It is caused by *L. icterohemorrhagiae* or *L. canicola*. The Leptospira organism is a long, closely-spiraled, cylindrical-looking microbe with pointed ends. The length varies from 6 to 9$\mu$ and the width from 0.25 to 0.3$\mu$. It has motility by either an active rotation or serpentine motion. Staining by ordinary methods is unsuitable, but fair results may be obtained with Giemsa stain under a darkfield examination. For a positive diagnosis the best results are obtained from a blood sample which has been incubating for four hours. An agglutination test is run and the results read under a darkfield examination.

In the early stages, the symptoms are not easily recognized, but in the advanced stages they can be read quite easily. The dog becomes restless, appetite is diminished or completely gone, there is a craving for water, the bowels are either loose or slightly constipated, and the animal shivers excessively. Vomiting occurs, the vomitus being at first yellowish, then greenish. The feces range from normal to a greenish paste or black, tarry substance. Temperature varies from 99 to 104.5°F. The mucous membranes of the mouth and gums usually show in the early cases areas of petechiae which are becoming confluent; later these progress into larger areas and finally develop into ulcers. If the animal lives long enough, jaundice becomes evident in the visible mucous membranes. In some cases there are marked respiratory symptoms which, when accompanied by fever, are likely to be misleading and cause one to make a diagnosis of distemper. The nose will be running or have the dried, sticky appearance of a dog with a well-advanced case of distemper. The eyes have similar changes. There may or may not be pleurisy or pulmonary congestion. Bleeding from the mouth and anus is noted where the *L. icterohemorrhagiae* is the predominating species. Muscular soreness is common.

**Dr. W. L. Bateman, veterinarian for the past 30 years in San Bernardino, Calif., is vaccinating a dog against rabies in a temporary office in an old corrugated iron building in Trona, Calif. This Mohave desert town, with a human population of about 1500 and a canine population of 125 to 150, has had an annual "Vaccination Day" for the past 10 years, at which Doctor Bateman vaccinates every dog in the town. There has been no case of rabies in Trona during the decade**

Treatment is symptomatic and supportive. Good results have been obtained from daily injections of nicotinic acid and vitamin $B_1$, the dosage varying from 3 to 5cc, and 3.75gm capsules of elixir glycerophosphate compound with a strychnine content of 1/32gr, given three times a day. Intramuscular injections of aricyl (an arsenical tonic) are given daily in 1cc doses, along with any other medicinal compounds which the symptoms suggest. Where there are respiratory complications, give 5 to 10cc of chlorna solution intravenously (a normal saline solution with a predominating magnesium ion which tends to correct the blood picture.) Attempt to get all possible nourishment into the dog. If regular diets fail, the patient is given by mouth white karo syrup and orange juice. Where vomiting persists, inject saline and glucose intravenously or subcutaneously.

In earlier stages of the disease, such treatment results in about 80% recovery. In cases where the vomiting persists and the ulcerations of the mucous membranes are marked, the mortality is nearly 100%.

[24] Elander, B. J., and J. K. Perry, 1940. Leptospirosis in dogs. *J.A.V.M.A.* 96:757, pp. 511-514.

## Diseases of Cats[25]

*Specific Enteritis.*—This is characterized by sudden onset, lassitude, and a temperature of 104° to 108°F., with or without vomiting. In untreated cases, a fatal termination may be expected in 12 to 24 hours. If the animal is treated while the temperature is still as high as 105°F. or higher, a cure can be effected by the use of serum in 90% of the cases. If the temperature has fallen to 104° or lower, the peak of the disease has been passed and treatment with serum is not so likely to be effective.

A combination of 10cc of homologous enteritis serum intraperitoneally and 10cc of mixed infection serum (feline) subcutaneously gives the best results. The animal is then sent home, with instructions to give 2½gr of sulfanilamide every four hours for the first 12-hour period, reducing the dose by one-half for the second 12-hour period. If the temperature is 103°F. or higher the second day, the dose of mixed infection serum is repeated (it can be given intraperitoneally with no ill effects when given alone). If the temperature is below 103°F., treatment may be discontinued.

*Abdominal Type of Feline Distemper.*—This presents much the same symptoms as specific enteritis, but may be differentiated from it by the presence of a profuse watery or bloody diarrhea, with early prostration from loss of fluids. In the later stages, progressive emaciation, nasal and lacrymal discharges, and ulcerations of the mouth and gums may occur. The subacute form of the disease may last for several days and terminate fatally; or recovery may occur in 10 days to three weeks. Because of the uncertain outcome, euthanasia is generally recommended.

The sera produced for infectious enteritis are only moderately effective against the abdominal form of distemper, but for want of a better remedy, it should be used as the initial procedure and symptomatic treatment followed thereafter. Dehydration should be combated by the administration of infusions or the parenteral injection of saline and glucose.

*Coccidiosis.*—This disease may present symptoms easily mistaken for distemper, coryza, or a simple gastritis, and diagnosis depends upon the detection of the coccidia in the feces or vomitus. The method of choice in treating all cases of coccidiosis is the use of carbarsone. The dosage, depending on size and age, ranges from ¾ to 3gr daily for five days, the series being repeated after a 10-day interval. This effects a cure in about 80% of the cases.

*Other Parasitisms.*—Hookworm is often found in the cat, especially in summer. In cases severe enough to cause anemia and weakness, the wisest treatment is not a vermifuge, but an iron product aimed at sustaining the blood level while reinfestation is avoided by sanitation. Iron and ammonium citrate administered in four-grain capsules twice daily over a period of at least two weeks, is the product of choice.

In ascariasis, one-half grain each of santonin and calomel every other day for three doses gives the best results.

For tapeworm, nemural is extremely effective.

*Septic Abscesses.*—A beginning abscess is best treated by light doses of x-ray. An established abscess should be opened, drained, and treated with a water-soluble urea jelly, preferably a 50% urea solution carried in tragacanth jelly. When the lesion is diminished to a shallow crater, the tincture or a solution of bismuth violet hastens tissue regeneration.

Sinusitis

In multiple cutaneous abscesses and in a form of what appears to be a suppurative arthritis, the organisms involved should be identified by ordinary Gram staining, and treated with appropriate bacterins, using the minimum doses suggested for human use.

[25] de Tienne, Thais A., 1940. Some important diseases of cats. *No. Am. Vet.* 21:7, pp. 419-422.

## Canine Nephritis[26]

The functions of the kidney are to assist in maintaining the acid-base balance of the blood and to remove waste products, particularly those of catabolism, from the blood by way of the urine. The urine is produced by a combination of filtration, absorption and secretion. Filtration occurs through Bowman's capsule, absorption through the thinner part of the tubules and secretion through the convoluted tubules.

For centuries nephritis has occupied a prominent place in human medicine. Contrasted with this, veterinarians have seldom recognized it in the living dog. On the other hand, veterinary pathologists have always called attention to the frequency with which kidney involvement is revealed on post-mortem examination of dogs. The conclusion seems inescapable that we have been overlooking most of the cases of kidney disease in this animal.

The symptoms of nephritis in the dog are often vague and in other cases may not implicate the kidney even remotely. In mild cases there are often no appreciable symptoms. The dog just isn't quite well.

Or a case may be presented in a middle-aged dog that is gravely ill: complete anorexia; frequent vomition; marked thirst; depleting diarrhea; fast pulse; pounding heart; subnormal temperature; congested conjunctivae; and foul odor to the mouth. One may see every gradation between the mild case described in the foregoing and the mortal case such as this.

In very advanced cases the uremia is marked and the breath has the odor of urine. Dehydration comes on apace in such cases and dissolution is not far off. Except for the uremia, and that is a symptom we can't wait the development of, this might with equal fidelity indicate gastritis, foreign bodies, intestinal obstruction, parasites, blacktongue, peritonitis, leptospirosis, metritis, or poisoning.

Examination of the urine, both chemical analysis and microscopic study, will assist in the differential diagnosis of nephritis. Blood-urea determinations also may aid in making a diagnosis. Urine examination should be resorted to upon the first suspicion that the kidneys may be involved.

Treatment varies with the type of nephritis. If albuminuria is marked treatment should consist only in combating the dehydration by saline or dextrose injection into a vein or intraperitoneally.

If the condition is due to infection, urinary antiseptics are indicated. Of these, methenamin is perhaps the one of choice. However, to be effective the urine must be kept markedly acid—pH 5.5 or lower. To accomplish this it may be necessary to give acid phosphates at the same time. If the stomach rebels, discontinue both and alkalize. Give acriflavine and sodium bicarbonate. When streptococci are implicated, neoprontosil has definite value.

[26] Severin, J. E., 1940. Canine nephritis. *J.A.V.M.A.* 96:758, pp. 622-629.

**See also in VETERINARY MEDICINE:**

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## Influence of Environment on the Incidence of Poultry Diseases[27]

The question of sanitation is one that comes up frequently in discussions of the control of diseases of live stock. To evaluate the effect of extremely good sanitation and of poor sanitation among fowl, the authors conducted an experiment extending over seven years.

Twelve pens enclosed in wire mesh and each containing an 18 x 20 foot shelter house were constructed inside a large enclosure. The pens were isolated one from another and arranged in pairs. The pairs of pens were populated over this long period with similar lots of fowls exposed to the same disease. Although identical in character the lots differed in appointments. In one, conditions such as generally prevail in farm poultry yards were maintained —the birds were in contact with the soil, food and water were supplied in open troughs, and an open drain ran diagonally through it to which the flock had access at all times.

In the remaining lot of the pair all contact with the soil was avoided and fecal contamination was at a minimum. The food was provided in self-feeders so constructed that the possibility of fecal contamination of the feed was practically eliminated. Drinking water was available in self-cleaning fountains. All other details of management, including the ration, were identical for both lots.

Tests, sometimes repeated tests, were made to ascertain the comparative incidence of the following diseases under these conditions:

1. *Bacillary White Diarrhea.*—There was no conspicuous difference in the incidence or behavior of the disease in the two lots.

2. *Fowl Typhus.*—The sanitary measures taken in the more salubrious pen had a very favorable influence on the prophylaxis of fowl typhus. The loss in the more sanitary pen was 10 birds; in the less sanitay environment, 70.

3. *Fowl Cholera.*—Practically no difference in the results in the two pens.

4. *Tuberculosis.*—With mature birds there was no difference between the more and the less salubrious environments. After a fowl attains the age of two years the chance of its acquiring tuberculosis from natural infection is remote.

5. *Coccidiosis.*—The results were favorable to the sanitary quarters.

6. *Blackhead in Turkeys.*—The results were strikingly more favorable in the sanitary environment; overwhelmingly so.

The authors' conclusions were:

1. An experimental attempt to determine whether or not healthy, non-reacting fowls exposed to others affected with bacillary white diarrhea would acquire positive blood titers by environmental contact, yielded negative results.

2. The sanitary restrictions adopted afforded a manifestly favorable influence on morbidity in the face of a fowl typhus hazard present in an environment occupied by the flocks concerned.

3. Although some evidence of the environmental transmission of fowl cholera was encountered it appears that the character of a given environment exercises no manifest influence. The benefits of sanitary restrictions are apparently canceled by the intensity and virulence of direct-contact infection.

4. In the transmission and dissemination of fowl cholera, apparently healthy birds, as infection carriers, play a dominant part.

5. A given environment may be either reasonably sanitary or the very opposite without greatly modifying the incidence of avian tuberculosis after tuberculous fowls have been introduced.

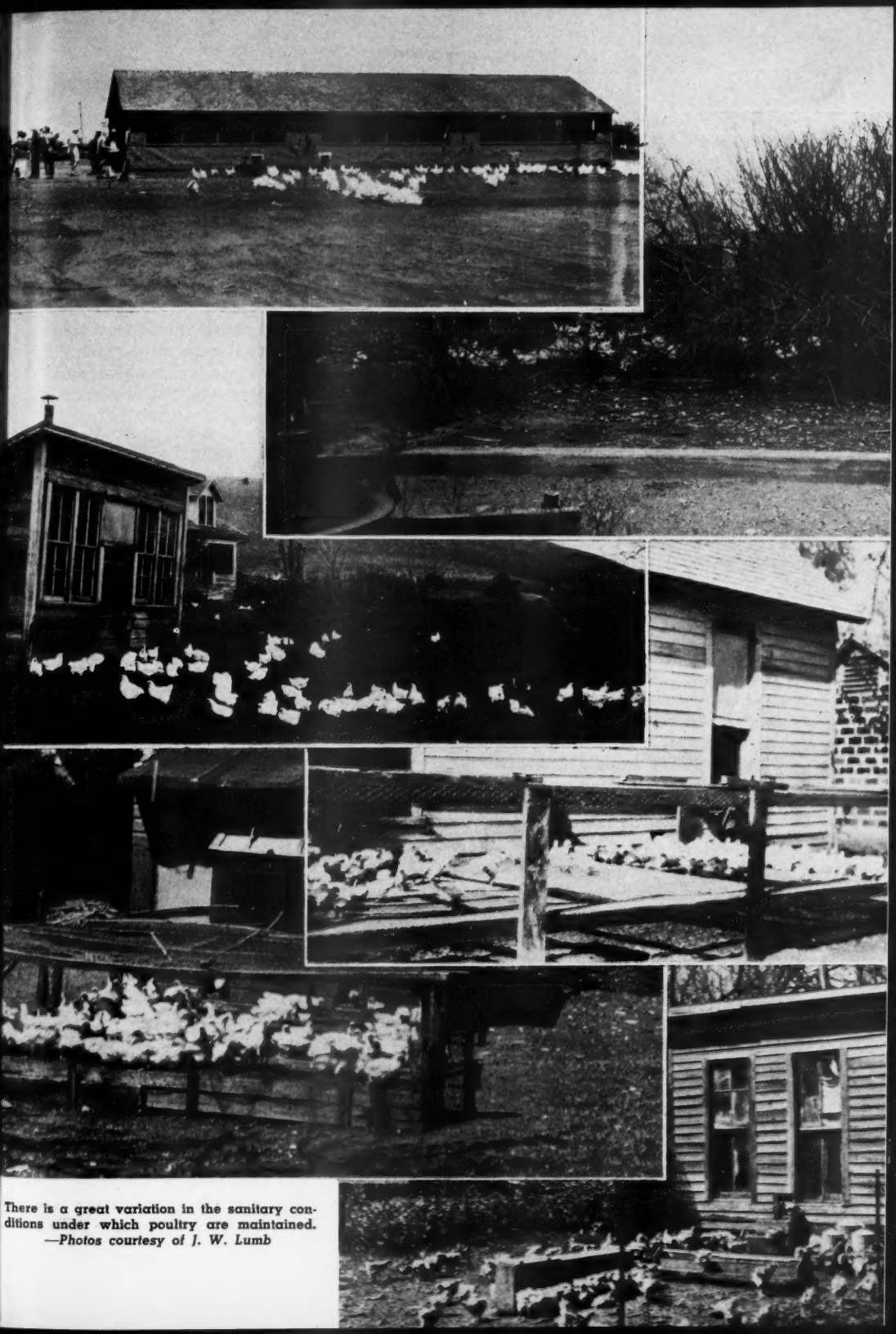
6. Healthy, older fowls showed a rather well marked resistance to avian tuberculosis when exposed by direct and indirect contacts in an environment in which the opportunities for doing so were ample.

7. In the evaluation of sanitary measures in connection with coccidiosis of chicks, mortality alone cannot be accepted as a final criterion.

8. The determination of coccidial infestation proved to be a more dependable criterion by which to judge the sanitary fitness of a given environment.

9. By the use of hardware-cloth panels combined with adequate protection of the food and water supply against fecal contamination it was possible to reduce the incidence of coccidiosis to a bearable minimum.

[27] Van Es, L., and J. F. Olney, 1940. An inquiry into the influence of environment on the incidence of poultry diseases. *Nebraska Agr. Exp. Sta. Bul.* 118.



There is a great variation in the sanitary conditions under which poultry are maintained.
*—Photos courtesy of J. W. Lumb*

10. Turkey poults were raised to maturity with a minimum blackhead hazard when maintained in an environment covered by coarse gravel, when food and water were provided in sanitary utensils and when contacts with common fowls were avoided.

11. Turkey poults may be raised to maturity in a restricted area covered by hardware-cloth panels without a blackhead risk even after the poults affected with the disease are introduced among them.

12. Poults maintained under a rather intense exposure to blackhead from one to four weeks may, to a considerable extent, find sanctuary when transferred to an environment where sanitary restrictions prevail.

13. The common fowl and its body wastes must be regarded as the fountain-head of blackhead infection. The blackhead hazard was still present in soil two years after common fowls were removed from the lot.

14. In an insalubrious environment, exclusively occupied by turkeys during six months of each year, blackhead morbidity progressively declined in the course of seven years, until a temporary occupancy by fowls of the lot concerned caused morbidity to exhibit an upward trend.

## Mycoses of Birds

Mycoses of chickens, formerly thought to be the cause of heavy losses, are of little importance in even reasonably well-managed flocks. Mycosis in turkeys, however, may be responsible for a high mortality.

Mycosis is of three types—aspergillosis, favus and thrush.

Aspergillosis (brooder pneumonia) is primarily a respiratory disease, usually affecting the trachea, bronchi or lungs, or all three. A diagnosis requires confirmation by microscopic examination. It is thought that it is acquired from moldy litter or feed and is prevented by keeping such materials away from the birds. Treatment of obviously affected birds is unprofitable.

Favus is a skin disease, uncommon and mild. Usually only the bare skin of the head and appendages is affected—covered with a white powder. Unaffected herds should be moved to new quarters.

Thrush (moniliasis) usually affects the mouth, esophagus, crop, proventriculus and gizzard, and may cause severe losses. The lesions consist of greyish white or yellowish raised areas in the affected organs, particularly in the crop ("turkish towel" appearance). A 1 to 2000 solution of copper sulphate substituted for the drink for a few days is the treatment of choice.

## Comparison of Tube and Whole Blood Tests for Pullorum Disease[28]

A comparison was made of the standard tube agglutination test with the stained antigen whole-blood agglutination test applied for the detection of carriers of *S. pullorum* in turkeys, based on 7,714 tests in 13 flocks and 241 autopsies of reactors. The whole-blood test was found to be only half as efficient as the tube test in turkeys.

## Avian Mixed Bacterin Ineffective in Controlling Coryza[29]

The administration of three doses of avian mixed bacterin to a flock of pullets among which infectious coryza had been present for two months had no curative effect on infected birds nor protective effect on the non-infected, nor did it lessen the mortality of the flock. Chickens which were given one, two or three doses of the bacterin were not protected against contact exposure to coryza nine to 24 days later.

**See also in VETERINARY MEDICINE:**

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Paratyphoid Infections of Turkeys.....p. 590
Pathology of Pullet Disease.....p. 591
Hereditary Factor in Pullorum Disease.p. 596

[28] Hinshaw, W. R., E. E. Jones, J. R. Harr and W. E. Niemeyer, 1940. Comparison of the tube and the whole blood tests for pullorum disease of turkeys. *Cor. Vet.* 30:1, pp. 30-38.

[29] Beach, J. R., and R. A. Bankowski, 1940. A report of a field and laboratory trial of vaccinating chickens for infectious coryza with avian mixed bacterin. *J.A.V.M.A.* 97:763, pp. 320-322.

## Canine Filariasis[30]

Canine filariasis has long been known and is of world-wide distribution. In the United States it is most prevalent in the Southern states, in fact, until less than two decades ago was thought to be confined to those states. Of recent years it has been found in many if not most of the states farther north.

The adult worms, *Dirofilaria immitis,* inhabit chiefly the right ventricle of the heart and the pulmonary artery, but may be found elsewhere in the blood stream and even in tissues outside the blood vessels. They are long, slender worms, the male attaining a length of seven and the female 14 inches. The females deposit larvae directly into the blood stream and these—microfilariae—occur in great numbers in the peripheral blood stream of animals harboring adult females.

The clinical symptoms of heartworm infestation vary mainly with the number of adult worms present in the heart, with the amount of exertion the dog is called upon to make and perhaps with its age and natural vigor. The first symptom noted is usually that the animal tires easily. This is particularly true of hunting dogs. They may appear quite normal to the owner until taken hunting, when they tire out and are forced to quit after an hour or so. Listlessness, loss of weight, unthrifty appearance, anemia, bronchial cough and occasionally sudden death are other symptoms of this parasitism.

The microfilariae are carried from one animal to another by several species of mosquitoes and perhaps by fleas and possibly other parasites. It is thought these carriers act as intermediate hosts of the heartworm, i.e., that one state of its life cycle must of necessity be passed in some invertebrate host. In the South keeping dogs in screened enclosures during the night and twilight hours both morning and evening is regarded as a valuable means of protecting them from heartworm infestation.

[30] Hobbs, Walter R., 1940. Canine filariasis. *Cor. Vet.* 30:3, pp. 383-391.

**Adult Dirofilaria *in situ***

Three preparations are useful in the treatment of heartworm infestation: filsol, Fuadin, and stibsol. The first and last are given intravenously only; Fuadin may be given either intravenously or intramuscularly. The dose of each is graduated to the weight of the animal and all must be used with caution. It is probably not worth while to undertake the treatment of cases of heavy infestation. In the average case, treatment may require from three to 12 weeks, and the percentage of failures even then is disconcerting.

## Fleas Intermediate Hosts of Dog Heartworm[31]

Three species of fleas, *Ctenocephalides canis, C. felis,* and *Pulex irritans,* collected from dogs harboring *Dirofilaria immitis,* were found naturally infected with the microfilarial and larval stages of this parasite. Experimentally the extra-mammalian phase of the life cycle of the parasite has been completed in all three, somewhat more rapidly than in mosquitoes.

[31] Summers, W. A., 1940. Fleas as acceptable intermediate hosts of the dog heartworm, *Dirofilaria immitis.* Proc. Soc. Exp. Biol. and Med. 43, pp. 448-450.

## Poultry Teniacides[32]

Of 223 substances (inorganic substances, synthetic organic chemicals, and plant products) and 27 mixtures tested experimentally as anthelmintics for the removal of tapeworms from chickens, only lead arsenate exhibited any promise as a poultry teniacide; and it was found that in effective doses this is too toxic to be recommended for general use. If birds are severely affected and some treatment is imperative, lead arsenate may be administered under the direction of a veterinarian; experiments showed that lead arsenate containing a deflocculator (gum arabic was used in these experiments) was in most cases non-toxic in doses up to 1gm for chickens weighing 1,500gm (3 lbs. 2 oz.), although the same dose of the chemically pure substance caused some fatalities.

## Nemural as a Teniacide and Purgative for Small Animals[33]

The author has used nemural (Winthrop Chemical Co. trade name for 4-oxy-3-acetylamino-phenyl-arsonic acid-n-methyl-tetrahydropyridine-beta-carbonic acid-methylester) for dogs and cats infested with tapeworms, and for those requiring a purgative, with good results.

As a teniacide, the doses recommended are: one to four tablets (18 to 72mg) for each 15 pounds of body weight for mature dogs in good health; one-third to one tablet (6 to 18mg) for mature cats, and one-third tablet or less for kittens. Approximately the same doses are used for purgation.

The author administers the nemural in a small gelatine capsule three or four hours following a light feeding. Occasional cases vomit a short time after the drug has been given, but this does not appear to disturb the patient or affect the action of the drug. One to one and one-half hours later, an enema is given, whether or not defecation has occurred. The passage of mucus from the intestinal tract appears to indicate satisfactory action.

When the desired results have not been obtained, a small dose of arecoline hydrobromide is given one and one-half hours after the nemural; this combination usually works satisfactorily in stubborn cases.

Food should be withheld for at least six hours after the use of nemural, and only a light meal offered at that time. The dog is usually thirsty; the water intake should be limited to avoid emesis.

Usually there are no untoward effects, but if the action had been somewhat severe, especially when arcoline also has been used, the author gives 1/200 to 1/100 grain of atropine sulphate subcutaneously.

## N-Butyl Chloride as an Anthelmintic for Dogs[34]

Most canine anthelmintics possess one or more objectionable features, such as toxicity, low efficacy, or failure to remove whipworms although ascarids and hookworms are removed effectively. Reports of the relatively efficacy and low toxicity of n-butyl chloride led to experiments with this agent as an anthelmintic for dogs.

It was found that n-butyl chloride in relatively small doses is very effective for the removal of ascarids and hookworms from dogs; that it is quite effective for the removal of whipworms, particularly from heavier dogs; and that it is non-toxic in therapeutic doses for dogs.

On the basis of their experiments, the authors suggest the following schedule of dosages of this drug as a canine anthelmintic:

| Weight of Animal | For Hookworms and Ascarids | For Whipworms |
|---|---|---|
| 1-5 lbs. | 1cc | 3-5cc |
| 5-10 lbs. | 2cc | 6-8cc |
| 10-20 lbs. | 3cc | 10-12cc |
| 20-40 lbs. | 4cc | 15cc |
| 40 lbs. or over | 5cc | 25cc |

Note that all dogs infested with ascarids should be given a suitable purgative 30 minutes after the administration of the n-butyl chloride, to obviate intestinal obstruction due to the clumping of the worms killed by the drug.

[32] Harwood, Paul D., and James E. Guthrie, 1940. Tests with miscellaneous substances for the removal of tapeworms from chickens. *J.A.V.M.A.* 97:762, pp. 248-253.

[33] Davidson, W. G., 1940. A teniacide for dogs. *No. Am. Vet.* 21:3, pp. 161-164.

[34] Harwood, Paul D., A. C. Jerstad, Paul C. Underwood, and Jacob M. Schaffer, 1940. The efficacy of n-butyl chloride for the removal of intestinal nematodes, especially whipworms, from dogs. *No. Am. Vet.* 21:1, pp. 35-41.

## Phenothiazine for Removing Intestinal Worms from Swine[35]

Phenothiazine was found to be highly effective for the removal of nodular worms from swine, and as effective as oil of chenopodium for the removal of mature ascarids. It was much less effective against larval and immature ascarids, and its efficacy was less in lighter than in heavier infestations. A tentative schedule of dosage (for experimental use) was developed:

| *Weight of Pig* | *Size of Dose* |
|---|---|
| Up to 11.4kg | 5gm |
| 11.4 to 22.8kg | 8gm |
| 22.8 to 45.5kg | 12gm |
| 45.5 to 91.0kg | 20gm |
| Over 91kg | 30gm |

The toxicity of these and of much larger doses was found to be practically nil. Pigs given 10 times the therapeutic dose or more developed varying degrees of enteritis.

Phenothiazine can be administered to swine either in hard gelatine capsules (care being taken to avoid lodging them in the pharyngeal pouches), or mixed with the feed. Pigs show no objection to the medicated feed, but the difficulties of controlling the dose when administered in this manner are obvious.

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Animal Parasites and Parasitisms.....p. 618
A Blood Protozoan Infection in Turkeys.p. 649

[35] Swanson, Leonard E., Paul D. Harwood and James W. Connelly, 1940. Phenothiazine as an anthelmintic for the removal of intestinal worms from swine. *J.A.V.M.A.* 96:756, pp. 333-338.

## Victim of Undulant Fever Recovers Judgment from Milk Vendor[36]

Recently the Supreme Court of the State of Washington affirmed a judgment granted in a lower court against a milk distributor for damages suffered by a purchaser of the milk who, it was alleged, contracted undulant fever from the milk and was incapacitated six months and partially incapacitated for an additional period.

The cause of the action was based not only on violation of a city [Everett] ordinance against selling for human consumption any milk drawn from cows suffering from any disease, or milk containing pathogenic bacteria, or disease-producing germs, or milk which is unwholesome or impure, but also on the common law doctrine governing liability for negligence or breach of warranty in the sale of food that is unfit for immediate human consumption.

The herds that supplied the milk were enrolled in the Bang's disease eradication project and had been repeatedly tested by the state and reactors found on each occasion, both before and after the consumer contracted undulant fever. The trial court held that the milk was the probable cause of the plaintiff's illness.

This decision is of importance to veterinarians and health officers and to producers and distributors of milk. It should put the fear of God (and the sheriff) into the hearts of producers and distributors of milk to be consumed without pasteurization.

* * * *

**See also in VETERINARY MEDICINE:**

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*October*
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Vet. Aid in Epidemic Investigations....p. 562
Tularemia .....p. 608

[36] Williams, G. H., 1940. Undulant fever victim recovers judgment against milk distributors. *Corn States Needle* 11:2, pp. 6-7.

## Nutrition and the Veterinary Profession[37]

The importance of proper nutrition is becoming more and more apparent. Many of the disease conditions which in the past were thought to be of infectious nature have been established as being of nutritional origin; and improper nutrition is a factor of varying importance in many others. The veterinarian must keep informed in this field or run the risk of having his clients turn to other agencies for advice.

*Proteins.*—At present some 23 distinct amino acids are recognized, about 10 of which are essential for growth, development, and reproduction. Therefore the quality as well as the percentage of proteins must be considered in planning the ration. There is a frequent tendency to feed a too-high percentage of inadequate proteins. The heavy feeding of proteins may overstimulate animals to the point where they become highly susceptible to certain infectious diseases; this is particularly true with respect to dairy herds and mastitis.

*Carbohydrates.*—There are plenty of carbohydrates in almost any ration fed; the tendency to be on guard against is the overuse of carbohydrates at the expense of more important nutritive materials.

*Roughages.*—Dairy animals are capable of utilizing a large quantity of roughage, and unless it is provided, digestive problems arise. This is a frequent occurrence when feeding of concentrates is pushed in order to secure high production.

*Fats.*—In a proper dairy ration, a 4% fat level is about right; below this there is an excessive drain on the animal body, and above it nothing is to be gained.

*Minerals.*—At present there are 13 mineral elements recognized as essential to animal life: sodium, potassium, calcium, magnesium, sulphur, phosphorus, chlorine, iron, iodine, manganese, copper, zinc, and cobalt. Some of these are required only in minute amounts; others in larger amounts. Sodium chloride, for example, must be provided for cattle at the rate of approximately 2 lbs. per month in addition to what is contained in the feed.

It is generally known that calcium and phosphorus must be used and maintained in approximately a 2:1 ration; and that a sufficient supply of vitamin D is needed for proper calcium assimilation.

Before recommending the feeding of bone meal to supply calcium and phosphorus, it is wise to determine whether a calcium or phosphorus deficiency exists, or both, since otherwise there is the risk of carrying too high a phosphorus content into a ration where only calcium is needed, and thus actually aggravating rather than ameliorating the condition.

Lack of cobalt is responsible for so-called salt or bush sickness. The use of 1mg daily should correct this condition.

The use of ordinary iodized salt, containing about 1.5gr of potassium iodide per pound, is sufficient for normal iodine needs. Where an acute iodine deficiency exists, it can be corrected by adding 6 oz. of potassium iodide to each 100 lbs. of salt consumed; or it may be added to the bonemeal supplement if one is used.

The weekly use of an iron and copper solution in the diet of suckling pigs will prevent or correct nutritional anemia.

*Vitamins.*—Some pertinent points in the vitamin A requirements of cattle are: This vitamin is usually supplied in the hay in the form of carotene. If hay is improperly cured, or if unusual weather conditions such as the drought of 1934-35 reduce the carotene content of the hay crop, some fortification of the ration with vitamin A is necessary. Ordinary cod-liver oil is not suitable for administration to cattle, since it causes digestive disturbances and possibly off-flavored milk. Fortified oils of high unitage or commercial carotene are suitable. Soy bean hay or finely cured, leafy alfalfa are generally good sources of the vitamin.

Vitamin $B_1$ deficiency, although of significance in the etiology of certain diseases of small animals and of poultry, does not appear at this time to be very prevalent among other classes of live stock.

[37] Warren, D. M., 1940. Nutrition and its relationship to the veterinary profession. *J.A.V.M.A.* 96:758. pp. 609-614.

Nicotinic acid's role in the cure of black-tongue in dogs is well-known. Riboflavin (which is abundant in buttermilk, dried skimmed milk, dried whey, soy beans, and yeast) is responsible for proper growth and hatchability in chickens.

The importance of vitamin D in poultry feeding has been recognized for a long time, and most commercial poultry feeds supply it in adequate amounts. More recently, its importance for dairy cattle, particularly calves, kept many months of the year in barns, has been established; these animals when not getting sufficient sunlight must be given additional vitamin D in a concentrate, unless good quality sun-cured hay is provided in sufficient quantities.

There is some disagreement as to the sufficiency or insufficiency of vitamin E in the average cattle ration; but it seems clear that where vitamin E intake is increased, there is a marked improvement in the breeding performance. Some producers of commercial feeds are now fortifying their dairy rations with wheat-germ oil. The amounts that are practical to include in a feed are not sufficient to correct an actual deficiency in the vitamin, and in such cases additional vitamin E must be supplied.

*Fatty Acids.*—These appear to be responsible for proper conditioning, hair coat, and finish. They are provided in certain vegetable oils, notably linseed. Some animal fats also contain these essential substances.

## Molasses in the Ration of Hogs[38]

Pigs having an initial weight of approximately 50 pounds were fed a basal ration of barley, tankage and alfalfa, or the basal ration supplemented with 25%, 50%, or 75% of sugar-beet molasses. It was found that the addition of molasses at any of these levels resulted in slower and more costly gains than were obtained with the control ration, and that death losses were higher on the molasses-supplemented rations. Similar trials with pigs having an initial weight of over 100 pounds indicated that larger pigs can utilize molasses better than the smaller ones.

[38] Smith, H., 1940. Value of sugar-beet molasses in feeding of young hogs questioned. *Farm & Home Sci.* (Utah Agr. Exp. Sta.) 1:1, pp. 5, 11.

## Vitamins A and $B_1$ in Soy Beans and Cowpeas[39]

Fifteen samples of nine common varieties of soy beans and 10 samples of eight common varieties of cowpeas were assayed by the rat-growth method for their vitamin-A activity and vitamin-$B_1$ content. The results showed that neither soy beans nor cowpeas contain appreciable quantities of vitamin A. The soy beans contain 3.2 to 4.8 International Units of vitamin $B_1$ per gram, and the cowpeas 2.3 to 3.7 I. U. per gram. Both soy beans and cowpeas may therefore be regarded as excellent sources of vitamin $B_1$. There are no marked differences between varieties.

## Ascorbic Acid Therapy for Slow-Breeding Bulls[40]

On some rations cattle do not synthesize sufficient vitamin C (ascorbic acid) for their needs. Under such conditions the breeding efficiency of many bulls is greatly impaired. In such bulls it has been found that the subcutaneous injection of ascorbic acid brings about recovery in 65% to 75% of the cases.

The dose of ascorbic acid is 15 to 30 gr for a 1000 lb. bull. The injections are made at four-day intervals and may need to be continued for five or six weeks. Animals so treated exhibited markedly increased libido and the spermatozoa in their semen were more active for a much longer period than before treatment. The number of inactive sperms in the ejaculate was greatly reduced.

Ascorbic acid is available from chemical supply houses.

For hypodermic injection it should be dissolved in a buffer made as follows:

℞ Monobasic potassium phosphate..... 1.
Sodium phosphate (dried U.S.P.)..... 0.4
Redistilled water .....50.
M. et F. Sol.

Sufficient ascorbic acid for a dose dissolves readily in 5cc of this buffer solution.

[39] Halverson, J. O., and F. W. Sherwood, 1940. The vitamin A activity and the vitamin $B_1$ content of soy beans and cowpeas. *Jnl. Agr. Res.* 60:2, pp. 141-144.

[40] Phillips, Paul H., 1940. Directions for the ascorbic acid therapy of slow-breeding bulls. *J.A.V.M.A.* 97:761, pp. 165-166.

## Vitamin A Requirements of Chickens[41]

A series of experiments with vitamin A fed as carotene to growing chicks, growing pullets, and laying birds indicated that to provide a reasonable margin of safety, the rations should contain 180 micrograms, 200 micrograms, and 500 micrograms per 100gm of feed, respectively.

## Iodine in Animal Nutrition[42]

After reviewing the literature on the subject, which includes a maze of highly contradictory reports on the usefulness or otherwise of supplementing animal rations with iodine, the authors agree with Maynard that the use of this element is best restricted to the prevention of goiter and related troubles in areas where they otherwise occur, at least until positive benefits for other purposes have been clearly proved.

**See also in VETERINARY MEDICINE:**

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[41] Sherwood, R. M., and G. S. Fraps, 1940. Requirements of chickens for vitamin A when fed as carotene. *Texas Agr. Exp. Sta. Bul.* 583.

[42] Fairbanks, B. W., and Elizabeth Curzon. 1940. Iodine in animal nutrition. *No. Am. Vet.* 21:1, pp. 25-28.

## Vitamin E Produced Commercially

The scientific quest for more precise knowledge as to the role of vitamin E is being furthered along new and far more extensive lines, following the recent announcement of the availability of the synthetic vitamin on a commercial scale. Known as ephynal acetate, the substance is being manufactured in the laboratories of Hoffmann-LaRoche, Inc.

Ephynal acetate is approximately 170 times more active than crude wheat-germ oil, best known natural source of vitamin E, and eight times more active than the refined non-saponifiable fraction of the oil. It has a wide margin of therapeutic safety, and prolonged use is not attended or followed by deleterious effects. In the clinical research work doses of ephynal acetate several hundred times the effective therapeutic dose were administered without causing toxic reactions.

The first synthesis of vitamin E was accomplished in 1938 by Professor Karrer and associates in Switzerland. Discovery and identification of vitamin E is generally attributed to Professor H. M. Evans of the University of California.

In human medicine the outstanding application for vitamin E therapy at present is in the treatment of amyotrophic lateral sclerosis and muscular dystrophy. The results have naturally led to its experimental use in other nerve disorders due to or associated with trophic or degenerative disturbances, including encephalitis, poliomyelitis, and other inflammatory or infectious diseases of the central nervous system.

Among the other conditions for which deficiency of vitamin E has been suspected of responsibility are threatened and habitual abortion and abruptio placentae. It is expected that the wider amount of research work which is being undertaken in these fields since the synthetic vitamin became available will throw more definite light on the nature and extent to which vitamin E is important to the reproductive system.

## Fluid Therapy in Dogs[43]

A starving animal may lose nearly all its glycogen and fat and half its protein and still survive, whereas the loss of 10% of its water causes grave illness, and a loss of 20% is promptly fatal.

Dehydration may be the result of toxemia, hemorrhage or shock, but more commonly the fully developed state is a result of vomiting, diarrhea or abnormal diuresis. It may develop very suddenly. Essentially dehydration is a deficiency of extracellular electrolites (mineral salts in the body fluids) and may occur either with or in the absence of loss of water.

The treatment of dehydration consists in supplying the necessary fluid, or more often fluid and salts combined. For reasons of economy, physiological saline solution will probably continue to be the injection most often selected for the treatment of dehydration in animals; however, Ringer's solution to which has been added 0.01% of glucose is the solution of choice. The injections should be made into a vein or subcutaneously.

[43] Anderes, R. L., 1940. Fluid therapy in dogs. *J.A.V.M.A.* 97:764, pp. 440-444.

## Calcium Gluconate Therapy[44]

Although calcium therapy in some form is usually indicated in milk fever and other conditions in which a hypocalcemia is present, the form in which it is administered is important for several reasons; including the fact that hypocalcemia is usually associated with hypophosphatemia and hypomagnesemia, and the irritating properties of some calcium compounds.

Calcium gluconate is relatively non-irritating to the tissues, but in order to obtain a nonprecipitating solution of the desired concentration, it has been necessary to add "stabilizers" of various types. These "stabilizers" affect the pH of the solution and represent a certain amount of foreign matter injected into the blood stream.

Dicalcium-phosphogluconate combines calcium gluconate and calcium hyposulphite. The preparation has a pH of 6.2, and calcium and phosphorus are present in the optimal ratio of 2:1. It may be used parenterally in any manner. It appears to be the agent of choice in milk fever. For in-

[44] Seiden, Rudolph, 1940. Calcium gluconate therapy (dicalciumphosphogluconate). *J.A.V.M.A.* 96:575, pp. 518-519.

Intravenous Injection in the Dog

travenous injection, the preparation is reinforced with magnesium chloride and glucose in balanced amounts.

## Sulfapyridine for Calf Diphtheria[45]

Calf diphtheria is an ill-defined clinical entity—a diphtheroid necrosis of the buccal or pharyngeal mucous membrane, or of both. The pharyngeal form is the more common; the buccal form is different from necrotic stomatitis. The primary cause of the condition is unknown. The necrosis is accompanied by a heavy invasion of *A. necrophorus*. Some have regarded this organism as the primary cause of the disease, but in view of the nature of necrophorous infections, for the present it must be regarded as a secondary factor in the morbid process. The disease affects animals up to two years of age, the highest incidence being between the ages of six months and one year.

Heretofore treatment has been mostly by curettage and local application of tincture of iodine, iodine and glycerine, salicylic acid in alcohol, tincture of merthiolate, and other agents. Not only were all these treatments valueless, but the patients were harmed by the manipulation which caused extension of the necrotic process.

Various internal treatments were tried also, including blood transfusions, administration of potassium iodide (orally), sodium iodide (intravenously), neoprontosil and sulfanilamide. The results were discouraging; the mortality remained high.

The author then administered sulfapyridine in nine consecutive cases. All recovered promptly. The temperature fell to normal with dramatic suddenness in every case. Other responses were equally striking. Dyspnea and cough were reduced in 8 to 24 hours; mouth breathing ceased; the appetite returned and became good. The animals were markedly improved in every way within 24 hours and appeared well on the way to recovery, to which they progressed without interruption or untoward incident.

The dosage of sulfapyridine used was one gram per pound of body weight daily for three days and one-half that amount daily for three days longer, the object being to attain a level in the blood of 5mg per cent and maintain it at that concentration. The daily portion of the drug was administered in four doses, i.e., ¼gm per pound weight four times daily.

James Farquharson

## Methylene Blue as an Antidote for Nitrate Poisoning[46]

A number of forage plants have been found to contain high concentrations of potassium nitrate. When such plants are ingested by cattle, some of the nitrate is reduced to nitrite, which converts hemoglobin into methemoglobin, causing an anoxemia the severity of which is proportional to the amount of hemoglobin converted. Oat hay, straw, and sorghums have been incriminated most frequently, although various other plants may under certain conditions cause nitrite poisoning.

Since methylene blue has been used in combating the methemoglobinemia caused by sulfanilamide therapy, its efficacy in counteracting that produced in cattle by the ingestion of nitrates was studied experimentally. It was found to be effective in two-gram doses injected intravenously as a 4% solution, this dose being sufficient to protect an animal weighing up to 550 lbs. against the ingestion of 14 lbs. of plant material containing about 5% of $KNO_3$. This would be a sufficient dose for all practical purposes, though since there is always a possibility that greater quantities might have been ingested, it is advisable to watch the treated animals for some time afterward and give another injection if symptoms recur.

[45] Farquharson, James, 1940. Sulfapyridine in the treatment of calf diphtheria. *J.A.V.M.A.* 97:764, pp. 431-435.

[46] Bradley, W. B., H. F. Eppson, and O. A. Beath. 1940. Methylene blue as an antidote for poisoning by oat hay and other plants containing nitrates. *J.A.V.M.A.* 96:754, pp. 41-42.

## Effect of Olive Oil and Cod-Liver Oil on Gastric Secretion[47]

A single small dose of olive oil or cod-liver oil (about 1cc per kg body weight), introduced a short time before a test-meal of meat into the stomach of a dog with a Pavlov pouch, reduced the volume, acidity and pepsin content of the gastric juice secreted by the pouch. This inhibition of gastric secretion was especially marked during the first two or three hours. There was no appreciable effect on the time of evacuation, and no increase of the gastric secretion in the late hours of the experiment, except after cod-liver oil, when the peptic activity was somewhat increased during the fifth and sixth hours of secretion.

The daily addition of a similar small dose of olive oil or cod-liver oil to a standard diet for one or two weeks likewise depressed the secretory activity of the Pavlov pouch, especially the secretion of acid. Olive oil inhibited gastric secretion more or less uniformly throughout the 24-hour period of observation, whereas after cod-liver oil a stimulatory effect on the peptic cells was observed during later hours of digestion. There was some evidence that cod-liver oil administered daily exerts a cumulative effect on the activity of the gastric glands.

**See also in VETERINARY MEDICINE:**

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[47] Kamarov, O. and S. A., 1940. Effect of olive oil and cod-liver oil on gastric secretion in the dog. *Canad. Med. Ass. Jnl.* 43, pp. 129-133.

## Milestones of Veterinary Progress[48]

This discussion deals briefly with the history of some clinical phases of veterinary medicine during the last 60 years, more particularly with the period from 1880 to 1900. It is interesting to note in the list of subjects for discussion copied from programs of veterinary meetings in that period numerous matters that are still on the agenda of veterinary meetings 40 to 60 years later. Among such may be mentioned: the use of x-rays in veterinary practice, the surgical treatment of roaring, nutritional causes of periodic ophthalmia, plant poisoning in live stock, maintenance ration for horses, local and general use of chloral hydrate, prophylactic inoculation against hog cholera, diagnosis of sterility in mares, artificial insemination of bitches, canine hysteria, canine distemper, veterinary corps of the U. S. Army, veterinary ethics, six-day practical courses, etc.

"A significant omission of the work of American veterinarians of 50 years ago is bovine medicine. No mention anywhere is made of breeding problems. Sterility in the bovine species was not studied. As the veterinary colleges were located in large cities mainly and students entered them to qualify in equine practice, little effort was made to employ capable teachers of bovine practice. Obstetrics and its complications were the principal subjects. The study of sterility, for example, came upon the practitioners suddenly in the 1920's, notwithstanding that breeding troubles were numerous and of tremendous importance. Poultry medicine was unknown and has remained neglected up to the present time."

[48] Milestones of Progress. *Corn States Needle*, 11:2, pp. 1-3.

# War Problems

## Influence of German War Conditions on Colic in Horses

The Germany army has sold many of its less desirable animals to private establishments because of the great need for horses by private industry.[1] These animals are in very poor condition. They have been overworked and undernourished, and have suffered from diseases and infections. They have been maintained on innutritious feed for weeks and sometimes for months, because of war conditions. The new owners have attempted to condition them for hard work in the shortest possible time by feeding them a great amount of very nourishing food. This sudden change of feed has provoked serious colics and other digestive troubles which have been followed by death in a great number of cases.

The Agricultural Board advises the owners to accustom such animals to the new living conditions slowly and for a considerable time to subject them to only a small amount of light work. Only in this way is recuperation possible.

* * * *

## Problems of Veterinary Surgery in Modern War

Prof. Henkels[2] of the Surgical Clinic of the Veterinary School, Hannover, is now in active service in the army and has therefore the opportunity of studying the situation created in this field by the present war. First of all the veterinary officer must be taught how to reach a right anatomical diagnosis. Because of the urgent necessity of a great number of veterinarians in wartime, their training has to consist chiefly of practical demonstrations. The organization of the different services—surgical intervention, instruments, x-ray examination, antigas defense and horseshoeing—must be carefully accomplished and constantly watched.

The author deals with antiseptic treatment of injuries. Besides the usual cleaning, disinfecting and dressing of the wound, the injured region should be, whenever possible, rested for some time. An increase in the ratio of success in operations follows immobilization.

Deep abdominal wounds should never be explored. One should never induce anesthesia in deep abdominal wounds; it contributes to the onset of peritonitis. The secretion of the wound must have issue to facilitate the exit of germs and their products. If some part of the intestine escapes from the abdominal cavity, it must be washed with tepid saline solution and replaced. Catgut must be used for suturing. Deep abdominal wounds have usually to be treated on the spot; therefore the veterinary surgeon must be skilled, alert and prepared for any emergency.

In the treatment of war wounds one must keep in mind that healing rarely occurs after a single dressing. The first veterinarian who treats a wound must, therefore, foresee the further development of the healing process thoroughly, and start the proper definitive treatment which may be continued and completed easily by other veterinarians who are to handle the case subsequently. A brief report should always follow the injured horse in its progress to the different stations in which it may receive treatment.

The greatest care should be employed in moving the injured animals, in order to avoid shock. This necessitates that surgical veterinary services be carefully organized.

During great battles all the responsibility and decision as to surgical intervention lies with the chief veterinary officer. He should be a responsible individual and be surrounded by an efficient staff.

In the field of military operations during the lull between battles the animals incur many injuries, and soldiers should be instructed by veterinary officers how to recognize such injuries and to call them to the attention of the veterinary officers that they may receive professional treatment at the earliest possible moment.

[1] Editorial, 1940. *Tierärztliche Rundschau* 46:37, p. 422.

[2] Henkels, 1940. Probleme der heutigen Kriegsveterinärchirurgie. *Deutsche Tierärztl. Wschr.* 48:28, pp. 337-339.

# Book Reviews

**Man's Greatest Victory Over Tuberculosis.** *By J. Arthur Myers,* Ph.D., M.D., F.A.C.P., Professor of Medicine and Preventive Medicine and Public Health, University of Minnesota, and Chief of Medical Staff, Lymanhurst Health Center, Minneapolis. Cloth bound; 419 pages, 31 illustrations. Charles C. Thomas, Springfield, Ill. $5.00.

This is the story of 23 years' war on bovine tuberculosis that the veterinarians of the United States brought to a successful conclusion in 1940. It is a must-read volume for veterinarians; the veterinarian who doesn't read it and do it now is, in the vernacular, just plain dumb.

The work will do more to build respect and prestige for veterinary medicine and the veterinary profession among practitioners of human medicine and a large section of the public than anything else that has ever been written. The high standing of the author, his nationwide reputation as a leader in the war on tuberculosis, and his recognized achievements in this field, and most of all the convincing manner in which the story of the conquest of bovine tuberculosis is told, afford an otherwise unattainable combination for acquainting the public, not only with the veterinarian's part in eradicating tuberculosis from cattle and removing a serious hazard to the health of the public, but with other achievements of the veterinary profession in the control and eradication of other animal diseases that menace public health or the general food supply.

The following list of chapter heads indicates the close adherence of the story to matters of veterinary interest; but only reading them cannot give an accurate concept of the entire friendliness and the respect and admiration with which this eminent authority in the field of human medicine regards the profession of animal medicine and its leaders. The chapter heads are:

Cattle as the Core of Civilization; Diseases among Animals; The Veterinarian; Recognition and Sacrifices of Veterinarians; Some Accomplishments of the Veterinarians; The United States Bureau of Animal Industry; Quarantine; Federal Inspection of Meats; Geographic Distribution and Prevalence of Tuberculosis in Cattle; Nature of Tuberculosis; The Tubercle Bacillus; Tuberculin; The Tuberculin Test; Diagnosis of Tuberculosis in Cattle; Treatment of Tuberculosis in Cattle; Immunity; Bovine Type of Tuberculosis in Man; Efforts of Veterinarians to Protect Man against the Bovine Type of Tuberculosis; Attempts to Control Tuberculosis among Cattle in Europe; Early Attempts to Control Tuberculosis in the United States; Education and Legislation; Eradication and Legislation; Eradication of Bovine Tuberculosis; The Economy of Eradication of Bovine Tuberculosis; Opposition to the Eradication Program; Tuberculosis in Animals Other than Cattle; Lessons for Physicians in Human Medicine.

Doctor Myers has been in practice as a specialist on tuberculosis and diseases of the chest since 1920; medical director of the Lyman School for Tuberculous Children since 1921; associate physician in tuberculosis at the Hopewell Hospital 1921-23; attending specialist in diseases of the lungs, University of Minnesota Students' Health Service, since 1920; attending specialist in tuberculosis, District 10, U. S. Veterans' Bureau, 1921-23; chief of medical staff, Parkview Sanitorium, 1923-24; consultant in tuberculosis, Glen Lake Sanitorium, since 1924; chief of tuberculosis service, Minnesota General Hospital, since 1924; chief of Chest Clinic, University of Minnesota, since 1925. He is a member of various medical and scientific associations, most of the national tuberculosis organizations, and, incidentally, an honorary member of the A. V. M. A. He cannot have had the time and we doubt much that he had the inclination to write this volume (which required in addition to a professional knowledge of the subject much laborious literary research) merely to express his appreciation of a well-performed task or his gratitude for the service it has rendered in the war on tuberculosis in man. We think his main object in writing it was to acquaint his brother physicians with better methods than they have employed against the white plague and by comparison to shock physicians and others engaged in the fight on human tuberculosis into taking a more aggressive and more informed attitude. For example, the author says in his closing chapter:

"Human medicine is 40 years behind veterinary medicine in the tuberculosis control program. The views and activities of the former in 1940 are the same as [those of] the veterinarians in 1900. . . . Physicians have [been] and are quibbling over minutiae. . . . As long as physicians continue to wrangle over insignificant points or fail to inform themselves of what is already known, just so long will the control of tuberculosis be retarded. If one physician presents current information to a family and another makes statements to the same family that have long been obsolete, indifference will result. . . . *In the entire history of the control of tuberculosis in either man or animals, there is nothing that approaches the demonstration the veterinarians have made* [the italics are the author's] . . . As early as 1892 Bang of Denmark devised a contagious disease technic to prevent the spread of tuberculosis among cattle [that is] far better than that now practiced in many parts of this country to prevent the spread of tuberculosis among human being. . . . In human medicine various methods of administering the tuberculin test have been used, as was true in veterinary medicine. However, the veterinarians agreed on the superiority of the intracutaneous test in 1920 and it was accepted everywhere, whereas, in the medical profession, there are still numerous controversies as to which method of administration is best. . . . Not until the medical profession agrees upon one test, as did the veterinarians, and works as a unit, will the most be accomplished. . . . In human tuberculosis we have been satisfied with small programs aimed at the control of the disease. As a profession we have never undertaken to solve the problem on the same scale as [has] the veterinarian."

And finally the monograph closes with this sentence:

"We, as physicians, can profit greatly by numerous lessons taught us by the veterinarians. We need to accept the many facts they have established and [to] abandon personal opinions and theoretical procedures which are now retarding progress in tuberculosis control in man."

There are some few errors in the volume. They are minor and unimportant. We pass them over. Only one discussion can be classed as questionable—that of B C G vaccination. We don't need and we don't want B C G vaccination of cattle in this country, but that does not justify a parade of its early faults; faults due to imperfections of the product and improper methods of use, both of which have since been corrected or improved. It is the same kind of objection that is continually raised against brucellosis and rabies vaccines. The same technic would blast smallpox vaccination because of the crude method of Jenner, or encephalomyelitis vaccination because of its poor showing in 1937.

Among the outstanding physicians who gave the veterinarians powerful support in the long war waged on bovine tuberculosis (Theobald Smith, Ravenal, Charles Mayo, etc.) we think the name of W. A. Evans should have been included. The group named rendered powerful aid to the project when it was well under way and popular with a large majority of the medical profession and the cattle industry. Evans exerted the whole of his great influence in favor of the tuberculin test for cattle when it was generally damned and supported by none but veterinarians. His influence hastened its general approval.

***You may obtain any of the books reviewed in this department by sending your remittance of the published price to the Book Department of VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago, Ill.***

**Identification and Life Cycles of Parasites Affecting Domestic Animals.**

*By R. E. Rebrassier,* D.V.M., Department of Veterinary Parasitology, College of Veterinary Medicine, Ohio State University. Paper bound; 89 pages.

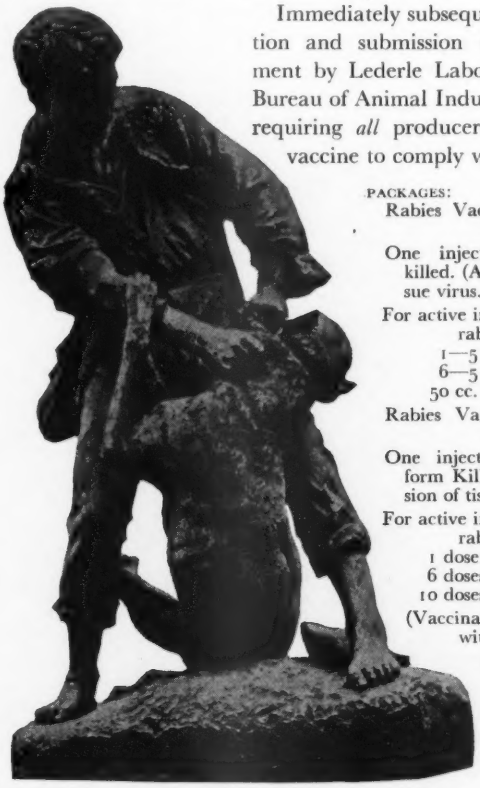
This treatise replaces one entitled *Diagnosis of Parasites in Animals,* published in 1938, which was reviewed in these pages (*Vet. Med.,* Dec. 1938, p. 599). This edition includes 37 additional photographs. These include some additions to the adult parasites, a few more life cycles, and, an entirely new feature, the inclusion of photographs of lice, ticks, and fleas. Some new technics have been added, also a description of life cycles of fleas, mites, ticks and lice. Exceptionally clear photomicrographs of parasite eggs reproduced in the same magnification as seen under the microscope facilitate the identification of parasitisms.

# *Meeting the Rabies Challenge . . .*

THANKS to fundamental fact findings resulting from continuous studies by investigators of field statistics, prophylactic vaccination of dogs as an aid in the control of rabies is approaching the position merited by the efficiency of the method.

The most recent contribution making for uniformity of vaccination results has just been announced by Lederle Laboratories. The announcement was the result of a two-year study by Lederle in the application of antigenicity tests to rabies vaccine, which demonstrated a wide variation of protective properties in vaccine marketed. In this announcement veterinarians were advised that only rabies vaccine which had passed the HABEL protection test of the U. S. Public Health Service was now being marketed by Lederle.

Immediately subsequent to the preparation and submission of this announcement by Lederle Laboratories, the U. S. Bureau of Animal Industry issued a notice requiring *all* producers of canine rabies vaccine to comply with the HABEL test.



PACKAGES:

Rabies Vaccine (Equine Origin)
***Lederle***
One injection method—Phenol killed. (A 20% suspension of tissue virus.)
For active immunization against rabies in dogs.
1—5 cc. vial
6—5 cc. vials
50 cc. vial (10 doses)

Rabies Vaccine (Ovine Origin)
***Lederle***
One injection method—Chloroform Killed (A 33⅓% suspension of tissue virus.)
For active immunization against rabies in dogs.
1 dose (5 cc. vial)
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■

Some are inclined to think of veterinary medicine in the "Prairie Provinces" as something new, or at least as having been initiated about the time they themselves brought to the locality the blessings of scientific animal medicine. For such the 50th anniversary meeting of the Veterinary Association of Manitoba, held at Brandon Aug. 10-12, 1940, must have been something of a shock. In addition to Manitoba veterinarians, the meeting and clinic were attended by a number from Saskatchewan and nine from North Dakota.

■

Dr. J. D. Paquette, of Cuba City, Wisconsin, sends us a letter he received from a man who wanted him to come to his farm and test a cow for tuberculosis and Bang's disease. Plainly dubious about the doctor's ability to find the place unaided, he included elaborate instructions on this point, which read in part:

*When you come from Cuba City coming over Route 151 just before you get to the Wisconsin bridge there is a railroad track and a viaduct over the railroad. You do not cross this viaduct but about 50 yards or so before you get to the viaduct, right at the foot of the hills, there is a road that would turn to your right along the foothills and about a mile from there is a man living by the name of Fred Skemp. You keep to the left and for about another mile, the road being winding you cross a bridge and immediately come to the end of the road. Then a road goes to the right and one to the left, and we live on the road to the left, the very first house which you can see while you are making the turn on your left hand side of the hill. . . . Now on your way from Cuba City when you get to Kieler we live only 3 miles from Kieler and that is also a good gravel road and if you would stop at Kieler they could probably direct you there. There is an intersection just before you get to Kieler coming from your way and there is a big sign board and with Highway Nos reading this way and that way, and you would turn there to the right on that gravel road. I don't believe that you can get off that road if you just stay on the main road. We live right near a little school and when you get to this school it is only 5 minutes walk from the school to our house, if a person is walking, straight west. I don't believe you will have any difficulty in finding the place, since you know the neighborhood and probably know where the place is.*

Doctor Paquette does not say whether he reached the farm all right. We ourselves got lost on the third turn to the left.

■

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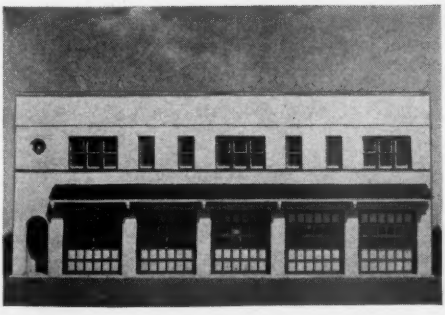

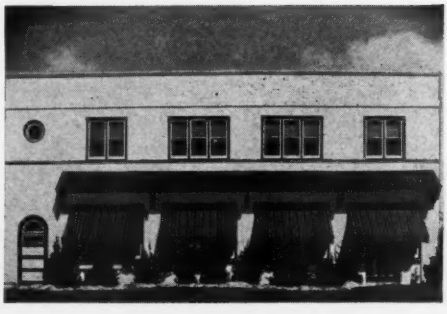

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## Army Veterinary Corps

*Transfers.*—Col. Clell B. Perkins, from Fort Benning, Ga., to Headquarters, Eighth Corps Area, Fort Sam Houston, Tex., Dec. 15; Lt. Col. Oscar C. Schwalm, from Fort Des Moines, Ia., to Camp Joseph T. Robinson, Ark., Nov. 4; Lt. Col. George W. Brower, from Fort Clark, Tex., to Camp Blanding, Fla., Dec. 1; Lt. Col. Louis C. Weisman, from Fort Ethan Allen, Vt., to Fort George G. Meade, Md., Dec. 1; Lt. Col. Harry E. Van Tuyl, from Ft. Sheridan, Ill., to Fort Custer, Mich., Dec. 15; Capt. Lloyd C. Tekse, from Presidio of Monterey, Calif., to the 11th Cavalry at that station; Capt. Karl H. Willers, from Fort Oglethorpe, Ga., to the General Dispensary, U. S. Army, Washingon, D. C., and to additional duty as attending veterinarian at Bolling Field and Army War College, Washington, D. C., Dec. 3; Capt. Frank A. Todd, from Fort Devens, Mass., to Fort Belvoir, Va., Dec. 3; Capt. Robert H. Yager, from Army Medical Center, Washington, D. C., to Second Corps Area Laboratory, New York, N. Y., following temporary duty for approximately three months at Front Royal Quartermaster Remount Depot, Dec. 8.

*Appointments.*—Maj. John R. Ludwigs, retired, is placed on active duty and assigned to the San Antonio General Depot, Nov. 15; Capt. Robert P. Kunnecke, retired, is placed on active duty and assigned to Fort Bliss, Tex., Nov. 26.

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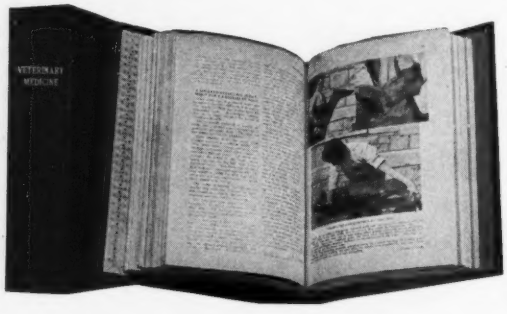

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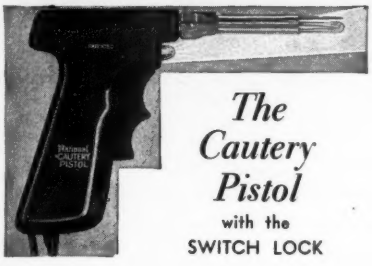

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## Veterinary Corps Reserve

*New Acceptances.*—1st Lts. Lewis I. Case, Jos. G. Feinberg, Thomas Lawrence.

*Ordered to Active Duty.*—1st Lts. Jack B. Knappenberger, to Robinson Quartermaster Depot; William J. Schuck, Jr., to New York Port of Embarkation; James K. Taylor, to Carlisle Barracks, Pa.; Karl F. Steinbach, to Army Medical Center, Washington, D. C.; Harold K. Miller, to Carlisle Barracks, Pa.; Richard A. Huebner, to Aberdeen Proving Ground, Maryland; Robert William Cook, to Chicago Quartermaster Depot; Garrett H. McNay, to Fort Reno, Okla.

*Returned to Inactive Status.*—1st Lt. Ben Winchester, Nov. 21.

*Transfers.*—1st Lt. Elmer A. Maier, from Fort Sam Houston, Tex., to San Antonio General Depot, Nov. 25; 1st Lt. Leslie C. Murphy, from Chicago Quartermaster Depot to Fort Benning, Ga., Nov. 25; 1st Lt. Harold D. James, from Fort Hayes, Ohio, to Army Medical Center, Washington, D. C., Dec. 8; 1st Lt. John E. Graige, from the General Dispensary, U. S. Army, Philadelphia, Pa. to the station hospital, Fort Sam Houston, Tex.

*Meat Inspection Course.*—The following officers, now on active duty, are ordered to re-


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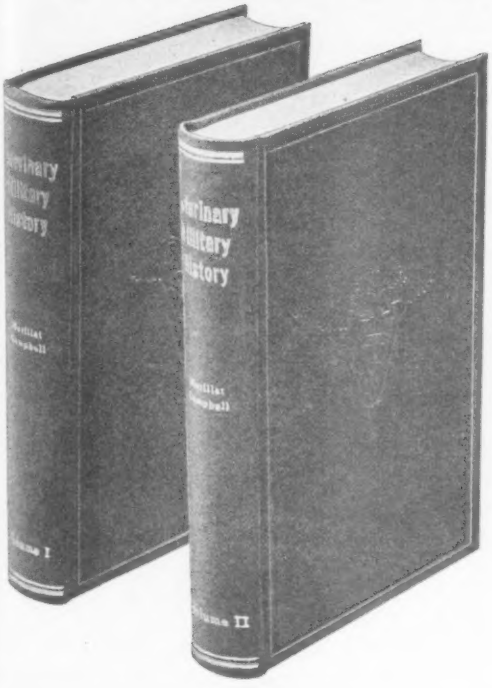

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■

A bouquet to Will Judy for the attractive Christmas issue of *Dog World*. . . . Among the interesting articles and items is a short discussion by Dr. L. A. Merillat entitled "The Dog Fancy and the Veterinary Profession." . . . Part of the compilation of canine statistics is reproduced in this issue of VETERINARY MEDICINE (page 5).

■

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## Coming Meetings

Vermont Veterinary Medical Association, The Tavern, Montpelier, Vt., December 28.

Minnesota State Veterinary Medical Society, Hotel Lowry, St. Paul, Minn., January 6-7.

California Veterinary Conference (sponsored jointly by the California State Veterinary Medical Association and the University of California), Davis, California, January 6-8.

Rhode Island Veterinary Medical Association, Crown Hotel, Providence, R. I., January 7.

University of Pennsylvania Conference for Veterinarians, Philadelphia, Pa., January 7-8.

Oregon State Veterinary Medical Association, Forest Grove, Ore., January 8.

Kansas Veterinary Medical Association, Kansas State College, Manhattan, Kans., January 8-9.

Cornell University Annual Conference for Veterinarians, New York State Veterinary College, Ithaca, N. Y., January 8-10.

Ohio State Veterinary Medical Association, Deshler-Wallick Hotel, Columbus, Ohio, January 8-10.

Oklahoma Veterinary Medical Association, Skirvin Hotel, Oklahoma City, Okla., January 13-14.

Intermountain Live Stock Sanitary Association, Newhouse Hotel, Salt Lake City, Utah, January 13-15.


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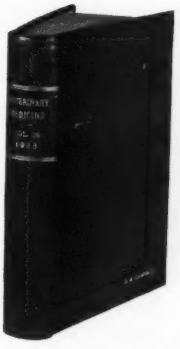

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Veterinary Medical Association of New Jersey, Hotel Hildebrecht, Trenton, N. J., January 15-16.

Tennessee Veterinary Medical Association, Noel Hotel, Nashville, Tenn., January 20-21.

District of Columbia Veterinary Medical Association, Mayflower Hotel, Washington, D. C., January 21.

South Carolina Association of Veterinarians, Wade Hampton Hotel, Columbia, S. C., January 21.

Illinois State Veterinary Medical Association, Leland Hotel, Springfield, Ill., January 23-24.

Iowa Veterinary Medical Association, Hotel Fort Des Moines, Des Moines, Ia., January 28-30.

North Carolina Short Course for Veterinarians, Raleigh, N. C., January 28-31.

Ontario Veterinary Association, Royal York Hotel, Toronto, Ont., January 30-31.

Michigan State College Post-Graduate Conference for Veterinarians, Michigan State College, East Lansing, Mich., January 27-February 1.

Missouri Short Course for Graduate Veterinarians, Columbia, Mo., February 11-13.

■

## State Board Examinations

Maine State Board of Veterinary Examiners, Augusta, Maine, January 13. Application blanks and instructions may be obtained from the secretary, Dr. S. W. Stiles, Falmouth Foreside, Maine.

Kansas Board of Veterinary Examiners, Topeka, Kansas, January 14. Information may be obtained from the secretary, Dr. Thos. P. Crispell, Exchange Building, Parsons, Kans.

Oklahoma Board of Veterinary Medical Examiners, State Capitol Building, Oklahoma City, Okla., January 15-16. Information may be obtained from the secretary, W. C. McConnell, Holdenville, Okla.

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## Deaths of Veterinarians

G. Floyd Ewalt, Detroit, Mich., Ontario Veterinary College '14, July 10.

Ernest J. Foreman, San Diego, Calif., Ontario Veterinary College '92, August 31.

James E. Ewers, Los Angeles, Calif., Kansas City Veterinary College '10, September 15.

Albert DeWitt Ewalt, 55, Utica, Mich., Ontario Veterinary College '14, October 11.

Howard W. Miller, 65, Columbus, Ohio, Ohio State University '08, October 28.

Carl L. Briggs, Meadville, Pa., University of Pennsylvania '26, October 30.

Howard H. Green, Portland, Ore., State College of Washington '19, veterinary inspector in the city meat-inspection division, November 1.

H. M. Walker, 53, Tallulah, La., formerly employed by the state in tick eradication work, practiced in Tallulah the last two years, November 6.

Albert C. Worms, 79, Elmwood Park, Ill., Chicago Veterinary College '96, chairman of the Illinois State Board of Live Stock Commissioners for many years, veterinarian for the Lincoln Park Zoological Gardens for the last decade, November 6.

C. L. Meyer, 58, Monroeville, Ind., practiced in Monroeville for 32 years, November 7.

Walter J. McKillip, Chicago, Ill., November 13. A son of the late Dr. M. H. McKillip, he was graduated from the McKillip Veterinary College in 1911, and taught at that institution until it closed in 1918. Since then he had been in practice in Chicago.

E. A. Buxton, 79, Vinton, Ia., Chicago Veterinary College '90, November 15. Doctor Buxton practiced for two years in Sycamore, Ill., moving to Vinton in 1892. A leader in civic affairs, he served as president of the Vinton school board for 21 years, and served alternately as councilman and mayor of Vinton for 14 years. The Eastern Iowa Veterinary Society, of which he was past president, honored him at a banquet last year for his 50 years of service in the veterinary profession.

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